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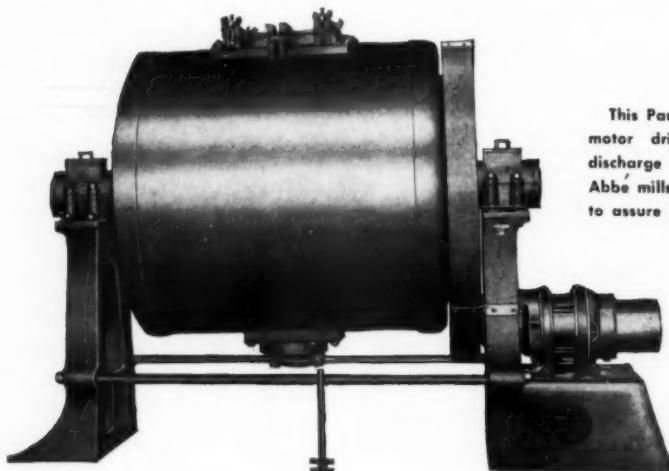
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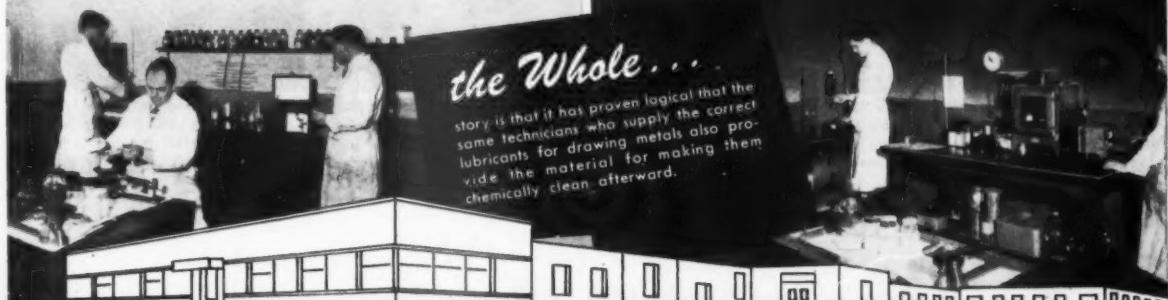
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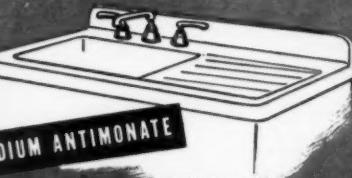
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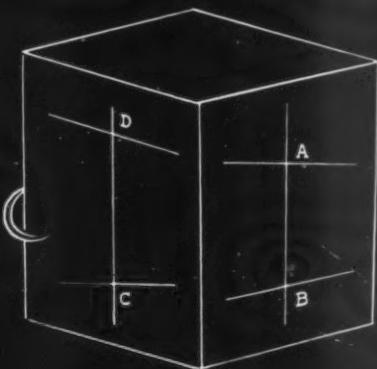
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A ROVING EDITOR sometimes finds a great many things to do other than dictate editorials. This may be the reason why printers and magazine production men say that in many instances the monthly editorial is the last bit of copy to reach the linotype operator at press time.

As a defense for busy editors, if a defense is needed, it might be interesting to follow the ramblings of your editor for a four to five weeks period.

A trip to Ohio

Late in January the National Electric Sign Association meeting in Chicago was covered, followed by a quick trip to Middletown, Ohio, for a day at the American Rolling Mill Company and visits with Ray Dadisman, Dr. Canfield, Harry Mercer and others in the organization close to the porcelain enameling industry. While there, the light gauge rolling mill for rolling sheets down to a thickness, or "thinness," of a gnat's eyebrow was inspected.

After a day in Cincinnati, the journey was north to Columbus for a trip through the plant of the White Castle System, builders of one of the first porcelain enameled steel buildings, and a visit with Gordon Lasiter, of Columbus Porcelain Metals Corporation.

From there, it was east to Newark, Ohio, home of Newark Stove Company, where President F. H. (Dick) Guthrie led the way through the completely rebuilt and modernized plant. The new plant follows almost exactly the model plant described in the October, 1945, issue of *Finish*. (*We Built a Plant on a Drawing Board*.)

A quick trip back to Chicago — and home for a weekend.

Monday, February 2, found the rambling editor in Cleveland for a meeting with Dudley Clawson, president, and Edward Mackasek, managing director, of the Porcelain Enamel Institute. Tuesday was spent in contacts with Republic Steel executives and some of Cleveland's many appliance producers.

On Wednesday morning the journey was to Mansfield, Ohio, by Greyhound Bus, where the afternoon was spent at the Westinghouse Electric Corporation enameling plant under the guidance of Jay Simons, enamel plant superintendent. Also visited with John Lannan, vice president of the Central District Enameler's Club, and others in the enamel plant organization. Thursday morning was spent in contacts with C. L. Van Derau, works manager; Ralph Bisbee, manager of quality control, and others in the manufacturing organization.

The Westinghouse post-war enameling facilities have interesting points for any enameler, and some of the current development work is of great importance to the industry. Reports resulting from this visit will appear later in *finish*.

An afternoon train ride on Thursday — and back to the office for *one full weekday* at the desk.

To the "sunny" south

The week of February 8 was spent in visiting plants in Chattanooga and Cleveland, Tennessee, and Atlanta, Georgia. The quote marks on "sunny" south refer to the "unusual" weather, which included snow, rain and ice. The weather didn't affect the southern hospitality, however.

The itinerary included a thoroughly enjoyable trip through the porcelain enameling facilities at Brown Stove Company (*A Completely Conveyorized Plant for Stove Work and Jobbing, January, 1947 finish*), and visits with G. C. Brown, company president; K. H. Brown, secretary and treasurer; L. L. Harle, purchasing agent, and Homer Gray, superintendent of the porcelain enameling division.

Other visits were with A. D. Walden, general manager of Hardwick Stove Co., Cleveland, Tennessee (Friend Bob Hurt was in Florida for a little fishing), and a brief visit with Leroy Rymer at Dixie Foundry Company.

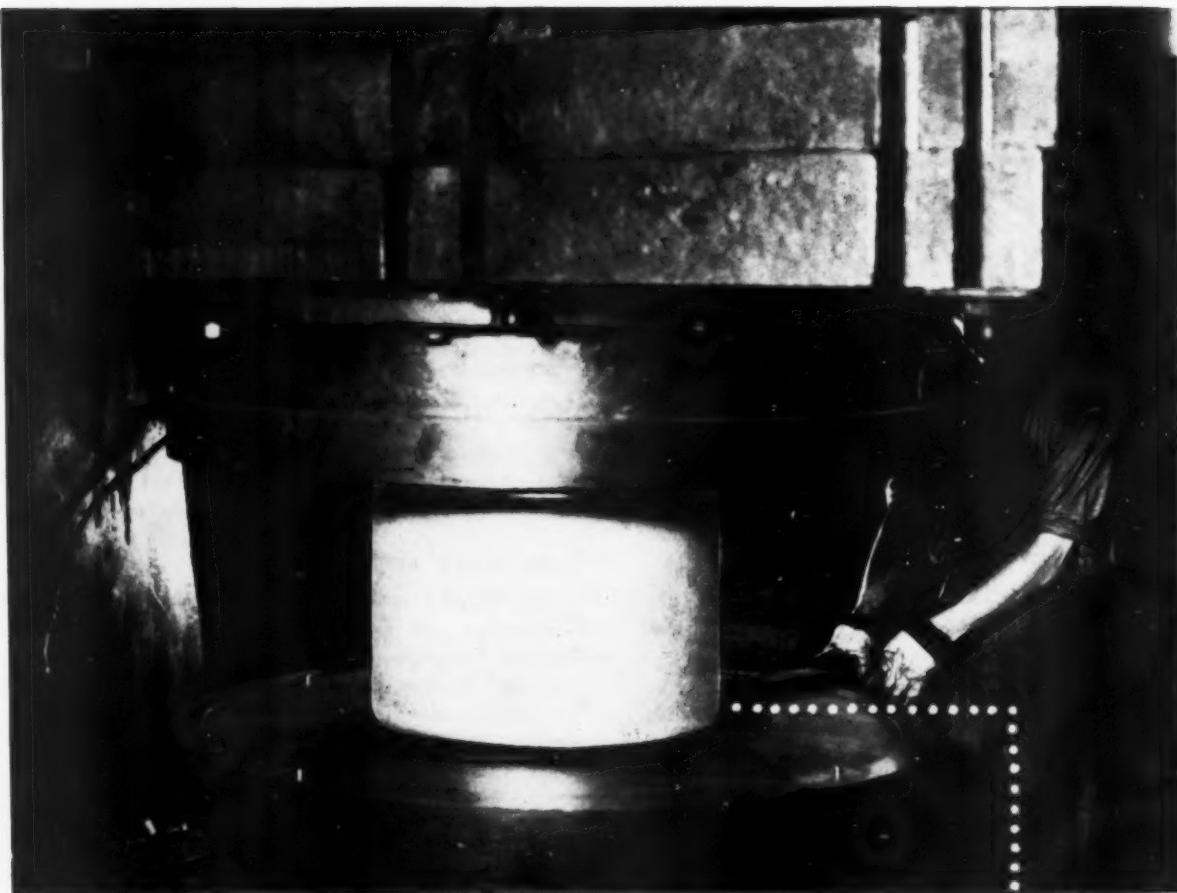
The first stop in Chattanooga was at Tennessee Stove Works for a visit with Hardwick Caldwell, president, and Ben Rawlings, plant manager. The visit included a trip through the enameling plant under the able guidance of Hardwick Caldwell, Jr. Two other sons, Bill and Bob, are also with the company.

The next stop in Chattanooga was at Samuel Stamping and Enameling Company, where Bill Samuel took time out to engineer a complete tour through the smelting and porcelain enameling plants. This company is making good use of the corrosion resistant properties of porcelain enamel for heater burners and combustion chambers.

It was extremely pleasing to see the number of room heaters with porcelain enamel finish produced by the various Tennessee plants.

In Atlanta an interesting day was spent at The Warren Company, producers of commercial refrigeration equipment, all models with porcelain enameled exteriors. Contacts there included L. C. Warren, president and director; V. P. Warren, II, works manager; T. G. Smith, assistant to the president; Ed Flowers, enamel plant superintendent,

to Page 62 →



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A new method for locating cracks in ceramic materials

By Frederick A. Petersen • SPECIAL RESEARCH PROFESSOR, UNIVERSITY OF ILLINOIS

Taber de Forest and Henry N. Staats • RESEARCH ENGINEERS, MAGNAFLUX CORP., CHICAGO

A NEW inspection method has been developed which should be of great value in disclosing minute surface discontinuities in non-conducting materials. The method employs equipment and materials for electrified particle inspection.*

The object to be tested is first coated with a warm penetrant solution, then dried by wiping or an air blast. A fine powder is then blown from a powder gun through a composition nozzle, which action imparts an electrostatic charge to the powder. The test specimen is held in the path of the spray and the powder particles are held electrostatically at the defect. They quickly build up a very visible powder indication of the discontinuity.

The penetrant is a water base liquid with low surface tension to facilitate its entry into fine defects or cracks. Penetrant is heated to 140° F. to overcome the adverse effects of high humidity which precipitates water on the test specimen. The penetrant is not necessary if the object being tested is metal backed, but it helps to obtain a more distinct crack pattern. Penetrant can be applied by various methods such as dipping, spraying, or brushing.

The powder has been selected for its special triboelectric properties. These properties enable it to readily acquire and hold a high electrostatic charge. Powder used is either black or white, depending on the background color of the material being tested.

The powder gun used in the process provides individual variation of air and powder quantity, volume, velocity, and degree of charge.

Application of method

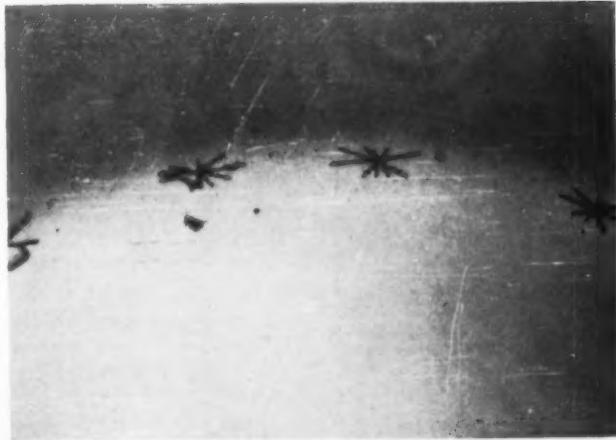
The application of this method can be best illustrated by research work which has been recently carried out on porcelain enameled ware. In the application of the test method to the study of the ultimate failure of enameled specimens, it was important

to know the size of cracks which were produced. Various methods were tried to determine the size of cracks which were indicated. These included macroscopic and microscopic examinations, surface replica methods, and electron microscope studies. Replica methods yielded the most infor-

FIGURE 1 — Right: Enlarged view of surface replica showing crack. Each scale division equals 3.2 microns.



FIGURE 2 — Below: Cracks on impacted inside of pan. (Normal size)



*Electrified particle inspection is described in pending U. S. Patent applications by Magnaflux Corporation of Chicago.

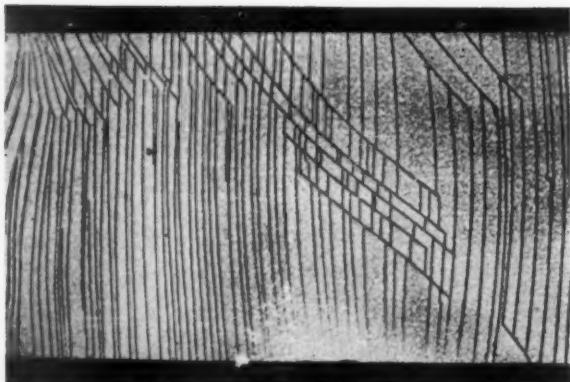


FIGURE 3—Characteristic pattern obtained by deflecting and twisting. (Normal size)

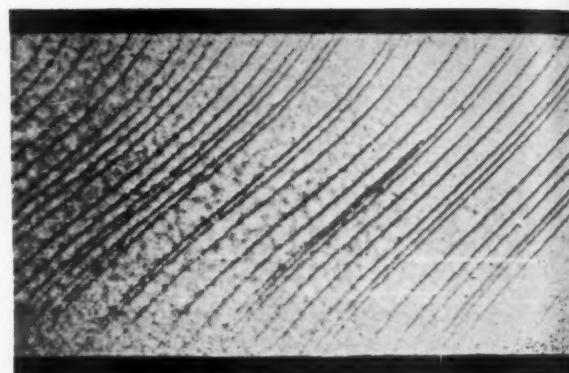


FIGURE 4—Characteristic pattern produced by twisting only. (Normal size)

mation. Figure 1 illustrates a replica of a crack. The picture was taken at 460 magnification, using a regular petrographic microscope. Each small division of the scale on the picture is equal to 3.2 microns; therefore, the crack is about one to one and a half microns wide, including the jagged edges of the crack. Figure 1 illustrates a rather large crack. Other cracks on the test specimen

shown by electrostatic particle inspection could not be resolved.

In most of the previous studies of the fracturing of enamels, the removal of a piece of enamel from the specimen constituted a failure. At this point the enameled shape has lost some of its eye appeal and perhaps utility. It is essential, in order to satisfactorily analyze the factors producing failures, to study the devel-

opment of the fracture system causing this ultimate, visible failure. The development of very fine microscopic cracks in the enamel layer may be an indication of subsequent failure.

Test results

Three types of tests were performed on porcelain enameled specimens; impact, bending and tor-

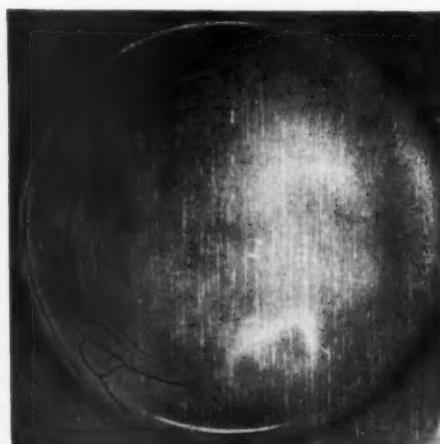
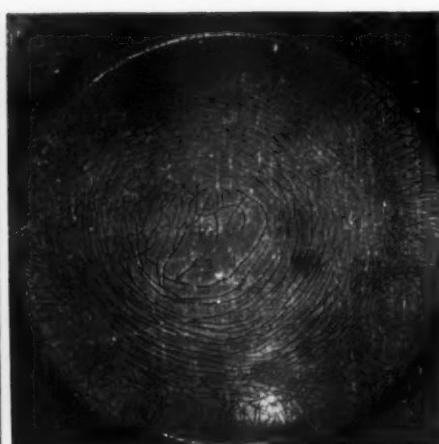
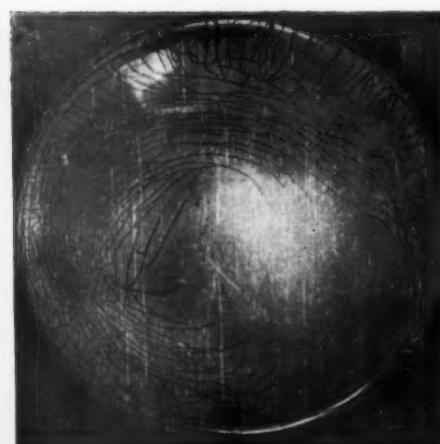


FIGURE 5—Shown are thermal shocked pans inside bottom after various cycles. Three-coat ware. Enamel thickness .015 inch. Top row: left, 1 cycle; right, 2 cycles. Bottom row: left, 3 cycles; center, 4 cycles; right, 5 cycles. (One-third normal size)



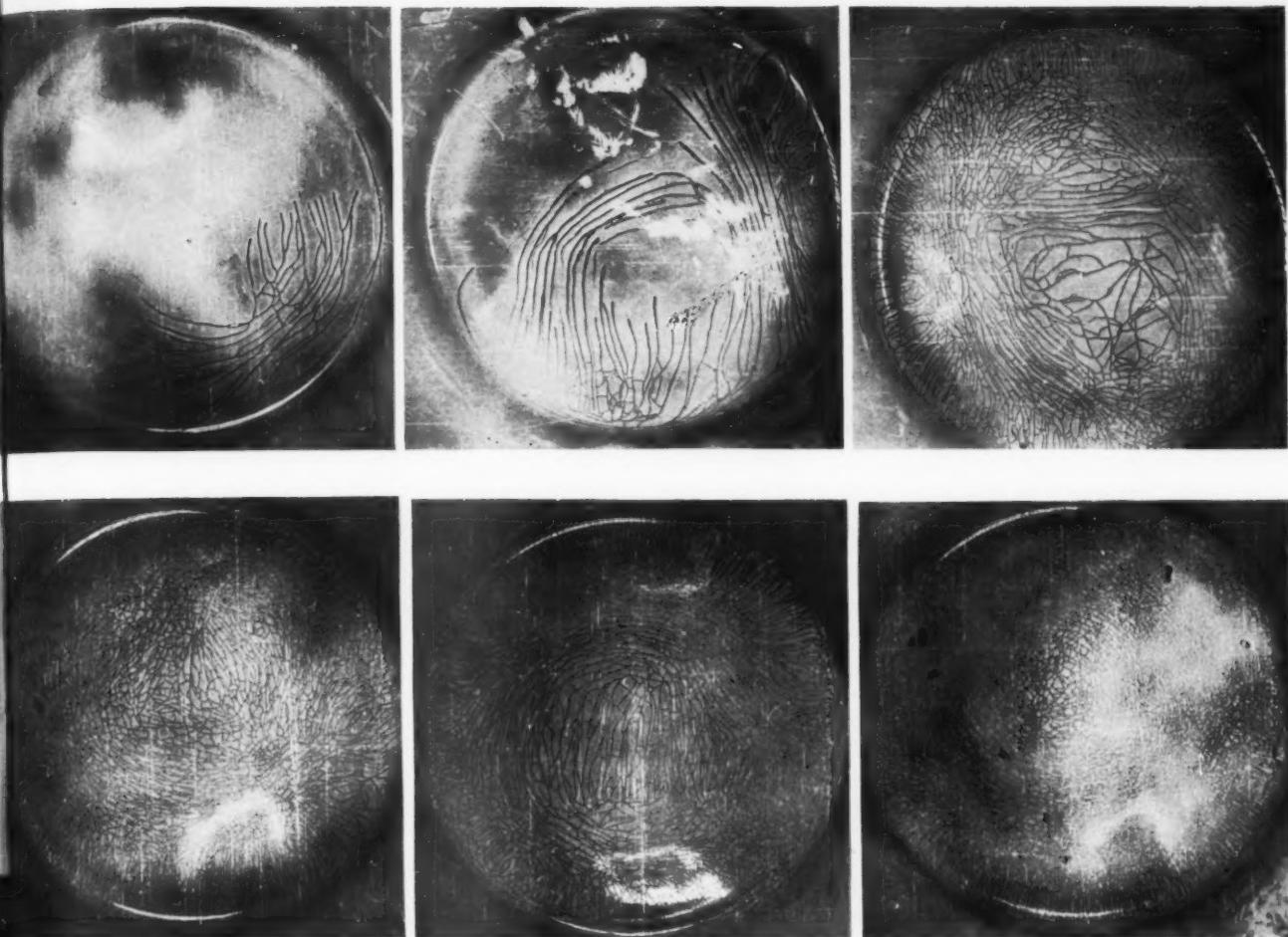


FIGURE 6—Shown are thermal shocked pans inside bottom after various cycles. Three-coat ware. Enamel thickness .014 inch. Top row: left, 2 cycles; center, 3 cycles; right, 4 cycles. Bottom row: left, 5 cycles; center, 6 cycles; right, 7 cycles. (One-third normal size)

sion, and thermal shock.

A series of pudding pans were tested by the falling weight impact test. In these tests the ball was dropped from successively higher levels, but each spot was impacted only once. Testing these pans on the impacted side and the inside of the pan at the point of impact showed some interesting results. Figure 2 shows the indications developed on the inside of the pan. The impacted side showed no evidence of cracks. Where failure occurred the characteristic oval-shaped flake with a hole in the center formed, but no cracks were evident.

Two by twelve inch strips were coated with ground coat enamel, then a coat of cover enamel was applied to one side. Figure 3 shows the crack pattern present after the strip had been deflected and twisted. On deflection, cracks are formed which are at right angles to the direction

of applied stress. Figure 4 shows a strip which has been twisted only.

In order to study the development of cracks as the severity of thermal shock was increased, three series of pans were tested according to the Enamelled Utensil Manufacturers Council standard test.*² The pans were tested for a given number of cycles. This gave three series of pans which had been tested from one cycle to the cycle of failure. The pans were

inspected using the electrostatic particle inspection method. The results of these tests are given in Figures 5, 6, 8. Cracks developed at various temperatures, depending upon the enamel used. The three-coat pans shown in Figure 5 were enameled with a fairly high coefficient of expansion enamel, which has low thermal shock resistance. The specimens shown in Figures 6 and 8 are coated with a medium low expansion enamel. A resumé of this data is shown in Table I.

Study of the crack patterns of quenched surfaces indicates that first

*F. A. Petersen and A. L. Andrews, "Standard Thermal Shock Test for Porcelain Enamaled Utensils," *Jour. Amer. Ceram. Soc.*, 28, (2), 36-41 (1945).

Table No. I

Cycle	Figure 5 3-Coat	Figure 6 3-Coat	Figure 7 2-Coat
1	crack	O.K.	O.K.
2	crack	cracks	O.K.
3	crack	cracks	O.K.
4	crack	cracks	O.K.
5	failure	cracks	crack
6		cracks	crack
7		failure	crack
9			crack
11			failure

a few cracks appear, and on increased severity of thermal shock the number of cracks increases. The data also shows that the cracks appear on the surface which is in tension (quenched side) and not on the surface which is in compression.

It is interesting to note that upon failure of the coating on a pan, the cracks in the topcoat coincide with the ridges of enamel remaining in the ground coat. This is beautifully illustrated in Figure 7.

Although the use of this method has been emphasized for its application on vitreous enameled coatings, it lends itself to the inspection of many other non-conducting materials. Originally the method was developed to locate defects in glassware, particularly beer bottles. Other applications include insulators, terra cotta, glazed pottery, glass lined vessels, plastics and artificial teeth.

Equipment has been developed for research laboratories and semi-production inspection. This unit is self

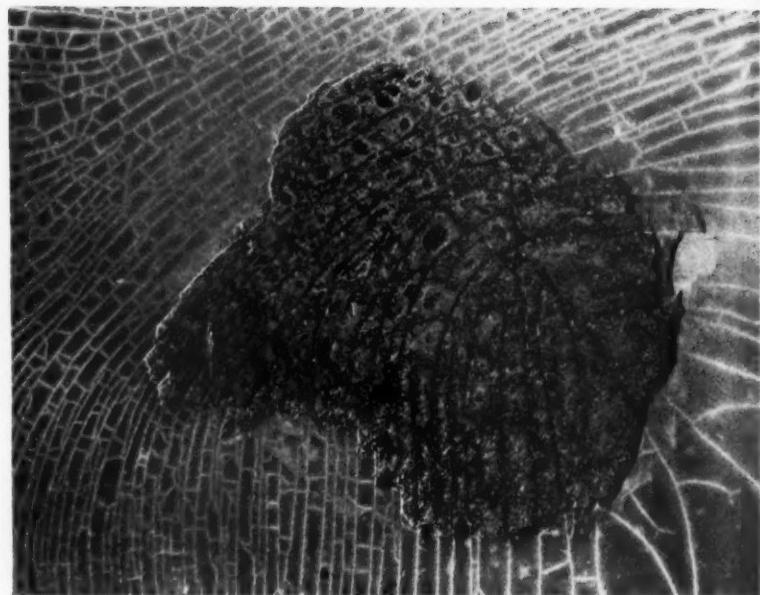


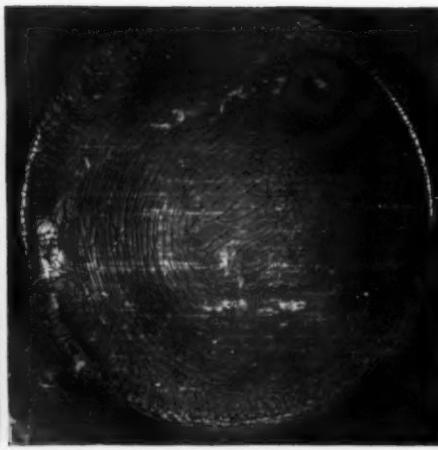
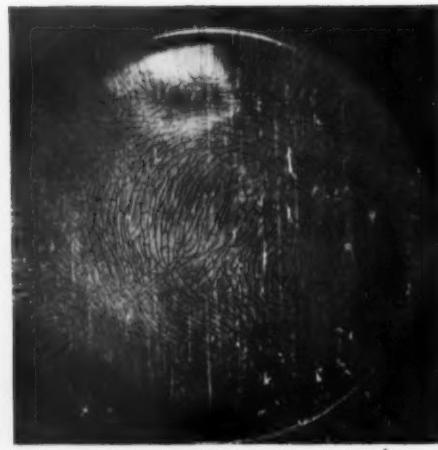
FIGURE 7—Crack patterns showing cracks are continued across fractured areas and appear as ridges of adhering ground coat enamel. (X3)

contained, having its own dry air supply, suction system to remove excess powder from the air, and a thermostatically controlled penetrant tank.

The method is adaptable to automatic processing on high volume inspection where the item to be inspected is sufficiently critical or expensive.



FIGURE 8—Shown are thermal shocked pans inside bottom after various cycles. Two-coat ware. Enamel thickness .010 inch. Top row: left, 5 cycles; right, 6 cycles. Bottom row: left, 7 cycles; center, 9 cycles; right, 11 cycles. (One-third normal size)



The handling of sheet steel

efficient materials handling integrates all types of handling equipment

By Russell L. Franing •

MATERIALS HANDLING ENGINEER, EAST MOLINE WORKS,
INTERNATIONAL HARVESTER CO., EAST MOLINE, ILLINOIS

In eliminating the hand handling of material, the ideal situation would exist where there would be no movement of material at all in the sense we know it today, that is, where the operator could use raw material from the stock pile and perform an operation on it, after which it would move automatically from operation to operation for riveting, welding, bolting, etc., and then to final assembly. Such an opportunity seldom exists.

In our plant, the use of different types of materials handling equipment is integrated in the flow of raw material, such as sheet steel, from receipt to shipment of end products from the factory.

Our sheet steel is bundled, wrapped and banded at the mill and shipped in gondola cars. The sheet metal storage is equipped with a cab-controlled overhead bridge crane which passes from one section of bays to another on crossovers and covers the entire storage as well as the railroad tracks which are inside the steel storage building.

Unloading bundles of sheet steel

In unloading, the bands are cut, the wrapping removed, and the bundles stored in piles by the crane according to gauge and sheet size. When disbursed for use, a bundle is placed on a centrally located inclined roller conveyor by the overhead crane. The bundle passes through an opening in the dividing wall between the sheet metal storage and the sheet metal fabricating department on this roller conveyor.

A floor-controlled electrically operated bridge crane, located behind the shear line in the sheet metal department, picks up the bundle from the conveyor and delivers it to the

proper shear. Here the bundle is placed on a castored shear table. Both cranes are equipped with electrically operated sheet metal grabs. After shearing, larger sheet metal parts are placed on flat topped balance wheel trucks and moved across an aisle into a storage bank. Smaller sheared sheet metal parts are placed on flat topped skids or into stacking skids and moved to storage banks.

Parts in progress

Sheet metal parts are moved from operation to operation by fork trucks. As the larger parts begin to take shape, they are placed in tiering racks at the presses where the operation is performed. These racks have been previously placed on four wheel castored dollies so that the press operators can help themselves in moving the loads short distances. All racks are kept on dollies while in operation at the presses.

Smaller sheet metal parts are placed in stacking skids and are moved from operation to operation by fork truck as are the loads of material in tiering racks. We service all our operators by power trucks. Each group of operators is also provided with skid lifts so that any one can move a load aside in the event a truck is delayed.

Completed sheet metal parts are delivered to the inspection checkout station of the department by fork truck. The stock in tiering racks is placed directly on a castored dolly by the truck and after inspection is moved beneath the conveyor drop. A "C" hook on the conveyor automatically picks up the tiering rack; the conveyor ascends to its normal position and delivers the material to its place of routing where it is removed on a similar dolly. Stacking skids loaded with sheet metal parts

are placed on the conveyor after inspection.

The large variety of parts which must pass over each machine tool in this department prohibits to a large extent the use of mechanical feeds and stackers. We use coil stock to some extent for smaller parts and automatic feeds for decoiling and feeding the dies. Consideration was given at a time prior to the war of developing automatic feeds for our presses at 75-ton capacity and upwards—similar to those used on vertical Miehle printing presses—but the disappearance of galvanized sheet steel and the necessity of using pickled and oiled stock precluded their use.

Elevating conveyors

and stackers used

We have attempted to use or develop automatic stackers for our shears in this department, but the wide variety of sizes and shapes of the sheared parts limits the usefulness of any of these devices at our plant. We make use of elevating conveyors behind some of our small blanking presses, and gravity-slide feeds for others. Elevating stackers are used for placing small dies in and removing them from small punch presses. Power die trucks service all the large presses. Full use is made in this department of suction cups and tongs for feeding stock into dies.

In all applications of materials handling equipment, simplicity should characterize our thinking so that the proper equipment from a cost standpoint is used for every job. We should analyze every activity and break it down into its elements. The basic fundamentals of materials handling equipment are all developed—ours is a problem of application.

to Page 64 →

THE steel scrap situation is serious. In order to bring an authentic picture to *finish* readers, we have asked executives of the steel companies supplying the appliance and porcelain enameling industries to present in their own words the situation as they see it today. After reading the opinions of these men, we believe every manufacturer will want to appoint a committee or otherwise place the responsibility of disposing of all usable scrap within the shortest possible time.

The American Rolling Mill Company

To *finish*:

We appreciate the effort you are making to uncover and speed more scrap iron to the steel mills.

Steel producers are severely handicapped in maintaining capacity production because of the continuing shortage of melting scrap. In fact, a number of open hearth furnaces are down again this week.

Although our production last year was the highest in our history, and the steel industry made a remarkable peace-time record, there will be additional capacity ready this year. This added capacity, however, cannot operate to relieve the continuing heavy demand unless more scrap iron can be found.

I believe the most practical way to find this scrap is to reestablish the plan that proved so successful during the war. The general managements of many companies appointed salvage committees with authority to comb their plants and properties and ear-mark every piece of obsolete and broken equipment for scrapping. They also searched every nook and cranny of the plants and yards for scrap and moved it promptly through the local salvage dealers.

I have been impressed by the current campaign of the General Motors Corporation. They are asking their 365,000 employes, their 15,000 dealers, and the managers of all plants to cooperate in launching a nation-wide voluntary scrap drive. They are using newspapers, posters and other effective means to point out the needs of the steel mills and the vital importance to everyone of increasing the flow of scrap iron.

If every purchaser of steel and user of steel equipment

will join in a serious campaign to search out available scrap, I feel that the mills will be able to step up and maintain a higher flow of steel for the benefit of everyone.

Signed:

**F. E. Vigor
Vice President,
Manufacturing and Mining**

Inland Steel Company

To *finish*:

Your efforts to generate more scrap should be most helpful and I know are appreciated by the whole industry. The following are my comments on the current scrap shortage.

With some of the leading steel manufacturers having open hearth furnaces down because of the lack of scrap, it is now not only an industry problem, but a national one.

There are many reasons for this shortage, but principally it has been brought about by nine years of capacity

**The steel scrap situation
are you doing?**

steel operations during which all reservoirs of scrap were tapped and scrap drives brought out many additional tons. Besides this millions of tons of both semi finished steel and finished steel products were sent overseas, both east and west, and little of the scrap from this steel will be shipped back to this country.

What can be done about the present shortage? Large and small companies alike should inaugurate scrap drives. The General Motors Corporation has recognized the need and has asked all of its employees and dealers to collect scrap and see that it moves through the proper channels. The scrap dealers know best what the mills can use and will segregate the undesirable scrap from the good steel scrap.

With the concerted efforts of millions of industrialists, many additional tons of scrap should move to the mills which will eventually alleviate the present shortage.

Signed:

**L. B. Block
Vice President**

MARCH • 1948 *finish*

The Youngstown Sheet and Tube Company

To *finish*:

Scrap is one of our most serious problems today.

Mr. C. E. Wilson, president of General Motors, recently issued a statement with respect to scrap, and in this statement he made a strong plea to the public and to the members of the General Motors organization to do everything which they could to get scrap moving to the mills, and moving promptly.

While we expect that we shall be short of scrap for a long time to come, the next ten or twelve weeks, beginning right now, will be really the crucial period, for, as you know, scrap collections fall off in winter, and our scrap receipts, and I am sure the industry's scrap receipts, have been decreasing almost daily.

The world is crying for more steel, and as you well know, here in the States no one is getting enough, so it behooves every one, who has any interest whatsoever in

age. Their inventories of scrap were lower than in 1942 when a nation-wide scrap drive was resorted to. Meanwhile, heavy melting scrap increased so much in price that in at least one month it sold for more than new steel ingots.

To produce large quantities of steel in the face of such a condition, steel companies such as ours must use a great deal of hot metal. Record-breaking blast furnace operation made this possible in 1947. However, for the first time in the history of American industry, we may see in 1948 blast furnaces idle for lack of raw materials. We have been warned by lake shippers that there may not be sufficient shipping capacity to bring down from the Lake Superior ore fields this year enough ore to keep these hungry furnaces at peak operation. This is due to several reasons beyond the control of the steel producers.

Obviously the only chance, therefore, of keeping steel production high is to make available every last pound of scrap as quickly as it can be gotten to the mills. Users of steel should make a check and a double check of their operations to make certain once again that scrap is accumulated and shipped as promptly as possible. In addition, they should examine again every "nook and cranny" of their plant for material and equipment which can be scrapped.

We are certain there are no large quantities of remote scrap in the country, for certainly high prices would have brought them out. In view of this fact, the hopes for high steel production in 1948 rest, to a great extent, with the steel fabricators and the promptness with which they get scrap back to the mills.

Signed:

C. M. White

President

steel to do everything which he possibly can to see that the maximum amount of scrap is moved in the direction of the mills at the earliest possible moment.

I strongly recommend that you read Mr. Wilson's statement.

Signed:

C. H. Longfield
General Manager of Sales

Republic Steel Corporation

To *finish*:

Whether or not the nation's steelmakers can continue their record-breaking peacetime production performance of 1947 during the present year depends to a great extent on scrap and its availability.

During 1947 steel companies were able to maintain less than a 20-day supply of prepared scrap on the aver-

In the event that other letters are received at the *finish* offices after the March issue goes to press we will plan to present them to our readers in a forthcoming issue. We believe, however, that all readers will agree that the information presented here by Mr. White, Mr. Longfield, Mr. Block and Mr. Vigor offers sufficient reasons why *every manufacturer* should again put scrap collection and disposal on a wartime basis until the present crisis is relieved.



Right: Aerial photograph shows porcelain enameled air marker installed on roof of Portland Packing Co. plant in Portland, Maine. Arrows point to three different nearby airports.

Left: Plastic asphalt cement is trowelled onto roof surface of bituminous impregnated roofing felt by maintenance employees of sponsor company.

Lower left: Then a porcelain enameled steel panel is fitted into place and pressed into the cement bed to obtain all-over contact.

Lower right: Photo of Unity Plant building roofs gives closeup view of part of the 65 items contained in the marker.

Another air marker of porcelain enameled steel

**letters 20' high mark the Unity Plant of Portland Packing Co.
for the benefit of all who ride the skyways**

By Christian E. Born • PRESIDENT, AIR MARKINGS, INC., BOSTON, MASS.



The aerial photograph and the smaller detail shots show the porcelain enamel air marker which we are installing on the roofs of the Unity Plant of the Portland Packing Co., of Portland, Maine.

This marker is now complete except for the installation of the airport names in the three airport direction arrows. Increasing freezing weather and snow prevented further work, and installation of these names will be made in the spring. Inclusion of names in the aerial photo was made possible by temporarily laying

of the enamel sheets on the roof in their proper positions.

Marker follows CAA standards

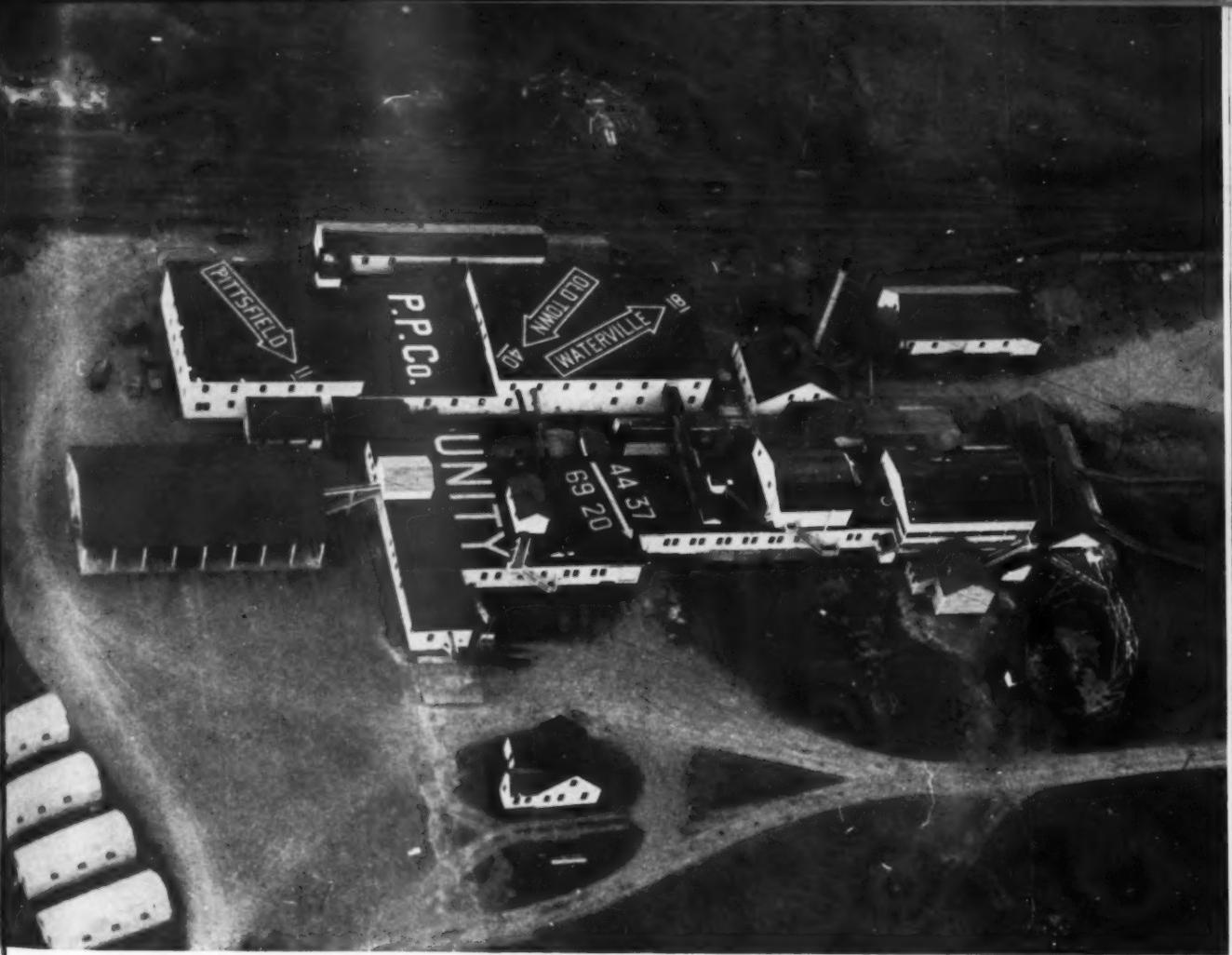
Civil Aeronautics Administration standards were used in the layout of all letters, figures and arrows. CAA-approved chrome yellow was used for all elements except the sponsor company's name which is finished in white enamel. The top to bottom height and width of stroke of all characters in each element are as follows:

*Unity—20'-0" height, 2'-6" stroke.
Overall length is 65'-6".*

North Arrow with Latitude and Longitude—Stroke of the shaft of the arrow is 2'-6". Overall length is 42'-1". Height of figures is 10'-0" and stroke is 15". Distance from top of latitude figures to bottom of longitude figures is 30'-6".

Airport Direction Arrows—Height of letters and figures is 7'-6" and stroke is 11 $\frac{1}{4}$ ". Stroke of arrow outline is also 11 $\frac{1}{4}$ ". The overall width





of all arrows is 13'-1½". The overall lengths of the Pittsfield, Old Town and Waterville arrows and mileage figures are, respectively, 67'-3¾", 70' 1½" and 77'-10½".

P.P. Co. — (The Portland Packing Co. is familiarly known by its initials throughout Central Maine where its many canning plants are located.) The large letters are 15'-0" high, with a stroke of 22½". The small letter is 10'-0" high, with a stroke of 15". Overall length, through the final period, is 49' - 4½".

Contrasting color suggested for company insignia

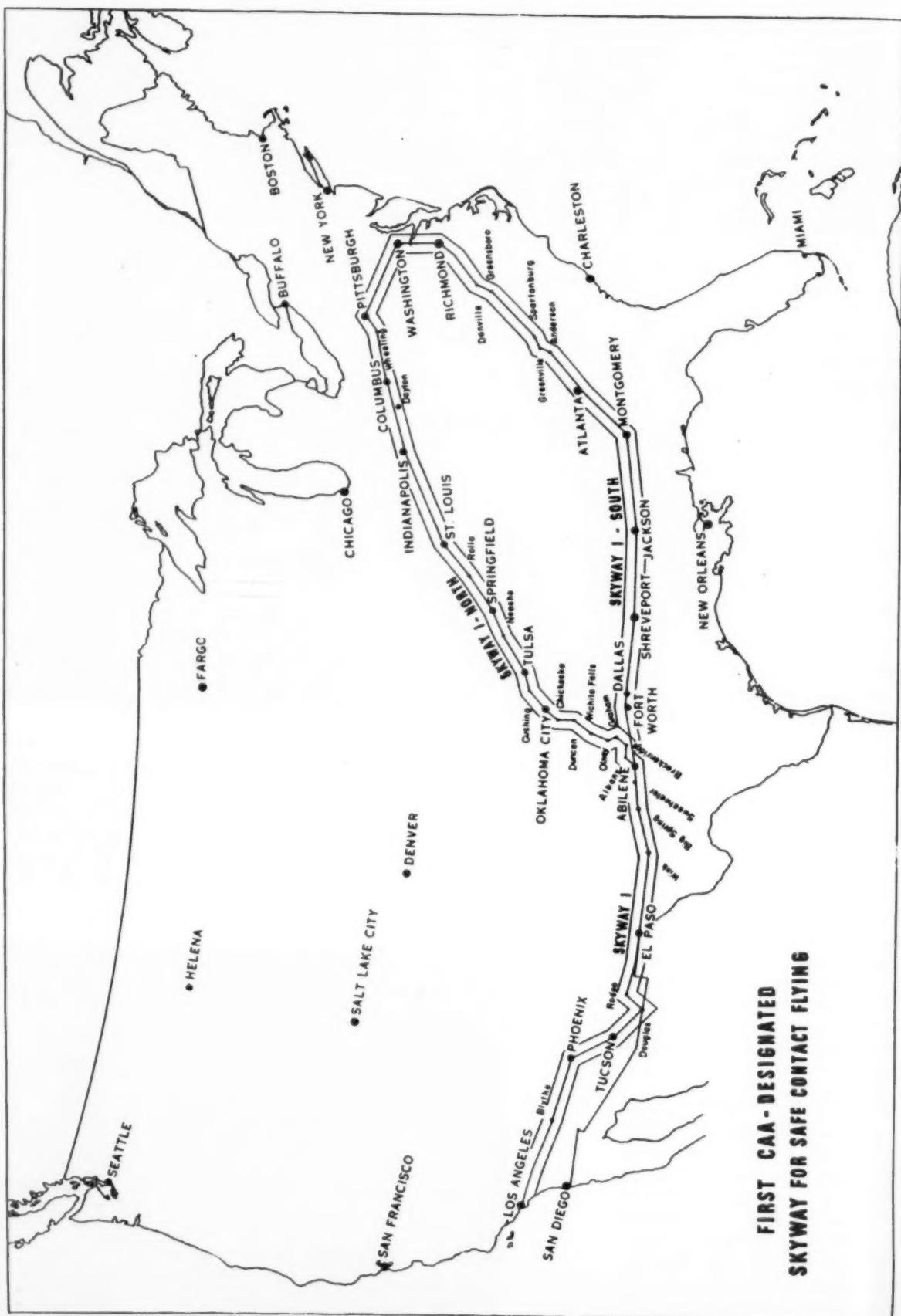
Identification of the sponsor of an air marker, by means of an element showing the company or product name or trade mark for advertising or public relations purposes, is permitted by the CAA. The CAA has, however, placed a limit on the size of this element and has recommended

the use of white or a company color for this element to provide contrast to the yellow of the standard elements so that a pilot will not be confused or misled by this addition to the standard marker.

Porcelain enamel for permanence

The Portland Packing Co. chose to install this air marker in porcelain enamel due to the long life inherent in this material and the knowledge that the bright color and high reflec-





← *Skyway One, first CAA-designated skyway for safe contact flying, is to be used solely for contact flying and will follow terrain best adapted to that type of flying. It will touch points where non-scheduled service is most needed and where personal flying is popular. The 40-mile wide route lies along established federal airways. Ground markers placed at towns and cities on the route will tell the pilot where he is and direct him to the nearest airport on his coast to coast air trip. In addition to the major cities shown on the map, approximately 5,000 municipalities are expected to become part of Skyway One by building air signs on their buildings and highways. The work of establishing and maintaining air markers will be done by the municipalities which will benefit by the expected increase of air traffic in their localities.*

tivity will remain indefinitely, thus eliminating continuous maintenance costs which are ordinarily required for less permanent type of installations.

The design, layout, detailing and scheduling of the various sized rectangular and odd-shaped sheets required to make up the various letters, figures, etc., were done by our company. The fabrication and enameling were done by the Bettinger Enamel Corporation, of Waltham, Mass. The entire layout was accomplished with a total of 303 sheets made up from 65 items of which 26 were odd shapes. We furnished Bettinger schedules of all pieces required, with dimension sizes of rectangular pieces and dimensioned detail drawings of all odd shapes. 18, 20 and 22 gauge material was used for the various shapes and sizes required.

Installed in bed of plastic asphalt cement

Installation work was done by maintenance employees of the sponsor company under the supervision of a representative of our company. Method of installation was the result of experiments conducted by this company with various gauges of material and different types of adhesives and cements. In this instance, as the roofing surface was bituminous impregnated roofing felt, plastic asphalt cement was trowelled onto the surface to make a bed into which the sheets were laid and pressed to obtain all-over contact and remove excess material. Caulking, where required along the edges of sheets due to unevenness of roof surface, was done with the same cement. All joints

were butted, excess material forced out, cleaned off, and the joints resealed, utilizing a gun and caulking compound. As a result, weather resistant edges and points and an excellent bond with the roof surface were

Editor's Note:

In connection with our constant search for editorial information pertaining to the use of porcelain enamel for air markers, we became acquainted some months ago with Air Markings, Inc. The company was formed to specialize in the marking of airports and municipalities, and to specialize in the production and installation of markers for the benefit of non-scheduled fliers. The author of this article has had extensive flying experience and is also an airport designer.

The company offers a four-fold service: Surveying of neighboring areas from the air, when required, for the selection of site; determination of true north, latitude and longitude, and the direction of the nearest airport; the laying out of proper marker elements so that they will be most clearly read from the air; and, finally, the installation of the complete marker and submission of data to C.A.A. for flight checks so that it will be included on the Aeronautics Sectional Chart.

While the company furnishes markers of various materials, porcelain enameled steel is featured as the No. 1 choice for economy, greater legibility, and permanence.

We salute this forward thinking organization in their presentation of porcelain enameled air markers as the ultimate for this service.

obtained. No penetration of the roof surface was required.

The selection of the Unity Plant over any other plant of the P.P. Co. for this installation was influenced

by several factors. Chief among these was the type of flat roof, many others being tar and gravel which does not lend itself to an inexpensive installation. The location of this plant along the established CAA Airway from Boston to the Canadian Provinces was another factor. This site also happens to lie on the route followed by many international flights, a large number of which we observed during the installation work. As an additional point in this connection, the true north arrow and latitude and longitude figures may, quite possibly, become a significant check point for the navigators on these flights.

Air marking aided by CAA skyways

Tremendous impetus is being given air marking by the new CAA-designated transcontinental Skyway No. 1. Skyway No. 11 also was recently designated, running from the Canadian border at Pembina, N.D., south to the Mexican border at Laredo and Brownsville, Texas. Skyway No. 2 is under consideration to run between Boston, Mass., and Seattle, Washington, and it is our belief that an East Coast Skyway may also be designated. The latter Skyway would logically include this outstanding porcelain enamel marker at Unity and it, therefore, may become one of the first and most complete markers along this route by the simple addition of the wing symbol with the proper number in place.

Boon to private fliers

Much has already been said in the aviation publications to bear out our belief that the installation of more and more Skyways will unquestionably be a tremendous boon to the private flier and will substantially benefit the entire aviation industry. As these Skyways cannot be considered from a short-term point of view if their benefit to aviation is to be continuous, we believe that porcelain enamel installations of the symbol and the standard marker elements will make the soundest, long-term investment and result in the greatest benefits to all concerned — the pilots, the sponsors and the industry.

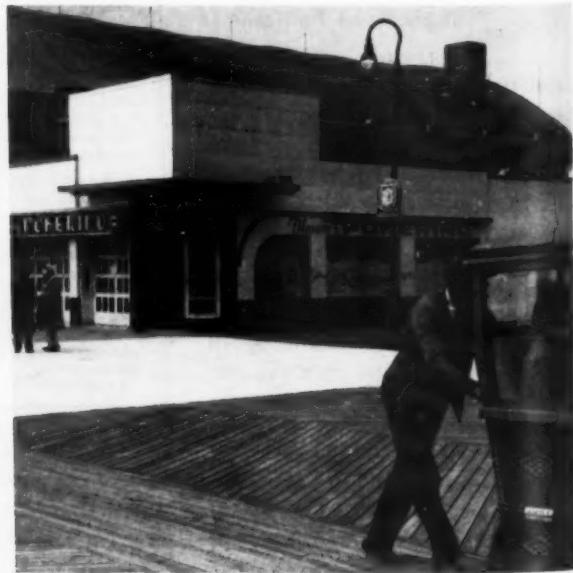
Trial by salt air at Atlantic City

ANYONE who has lived or traveled near the seashore knows what happens to metal surfaces protected by ordinary finishes. Those who have experienced automobile fenders practically dropping from the car, or viewed the signboards and ocean front structures finished with organic materials, know the serious problem facing the owner. Colors fade rapidly and finishes look "old" on comparatively new buildings. That is why one may expect to see extensive use of porcelain enameled metal under the corrosive conditions of salt-laden air.

Snapshots on this page show a few of the many porcelain enameled installations on Atlantic City's Board Walk. The jewelry store represents part of an entrance treatment to the Traymore Hotel which has for a number of years withstood the elements without loss of its original beauty.

Porcelain enamel is the one finish that will stand up satisfactorily at the shore.

finishfotos



The art of creating enameled portraits

hobby of 76-year-old artist illustrates how porcelain enamel can be used to produce permanently attractive paintings

By Matt E. Heuertz • FINISH EDITORIAL STAFF

THE modern development of the ancient art of enameling has resulted in the growth of two separate yet closely allied fields.

One is a growing industry devoted to finishing household equipment and industrial products in lifetime porcelain enamel. The other is a branch of the fine arts—ceramic painting.

As are most other artists using porcelain enamel as a medium for artwork, D. M. Campana, 76-year-old Chicago artist, is interested in the advancement of both industrial and artistic porcelain enameling. His interest is a practical one too, and stems from a desire to produce paintings which can last forever, and not deteriorate as do many water color and oil paintings.

Permanent paintings

as an interesting hobby

Campana creates large full-color paintings only as a hobby. And though he has received some very attractive offers for his lifesize portraits, he has never sold any of them. He once remarked that to part with one of his porcelain enameled paintings, which he calls "Ceramettes", would be like losing a very close friend.

A portrait painter in water colors and oils for many years, Campana first became interested in porcelain enamel as a medium for his artwork about 10 years ago. At an age when most men are thinking of retiring, he set out upon a new art career, even while still carrying on as active head of D. M. Campana Art Co.

His first porcelain enameled mural, a 24" x 36" painting of a harbor scene of his native Venice, was completed in full color in 1941. Next he completed his favorite and larg-

est work, a 32" x 48" portrait of the saintly Mother Cabrini. An interesting sidelight concerns this latter work. Though remembered principally for her kindness and charitable works, Mother Cabrini also was noted for shunning publicity. She would refuse to sit for portraits. However,

before her death in 1917, Campana completed a pencil drawing of her, relying upon his memory for details. It was this drawing that he used as a basis for his Mother Cabrini mural.

Another of his favorite works is a life-size painting of a prominent Chicago woman who volunteered to pose

This life-size portrait, which was finished in full color, is an outstanding example of the artist's use of porcelain enamel in his work.





for a full-color enameled portrait.

His latest work is a self-portrait which he completed in the fall of 1947.

Behind Campana's ability to produce rich full-color paintings lies a wealth of study and experience.

Early art training

In his native Italy, he studied at the Academy of Fine Arts in Venice for six years. As was part of the school's procedure, each student was trained in many lines of artwork—from sculpting to leather work—so that upon graduation each one would be a qualified teacher of many arts. Campana chose portrait painting as his specialty.

In 1895, at the age of 24, he ventured to America at a time when there was little demand for individually

Above: Campana's favorite porcelain enameled mural is this 32" x 48" portrait of Mother Cabrini. An old pencil drawing was used as a basis for this mural.

Right: The artist holds his latest work, a self-portrait of Campana painting a turquoise vase. It was completed in the fall of 1947.

executed artwork. So, to pay his living expenses, he had to secure regular employment in Trenton, New Jersey, with a leading manufacturer of art products.

In 1900 he moved to Chicago and opened an art studio in the old Auditorium Building. Here he taught oil and china painting which was much the vogue with the ladies of that era.

Artist authors

technical art handbooks

During his nearly half century in Chicago, Campana has managed to build up a thriving business. Among the stock carried by D. M. Campana Art Co. are some technical art handbooks authored by Campana. These instruction manuals deals with ceramic painting, water color and oil painting, wood carving, leather work, sculpturing, etc., with many of the booklets illustrated with the author's own work. His home in suburban Wilmette is decorated with many of





his works. At various times some of his artwork has toured the country with other selected works exhibited at the National Ceramic Exhibitions in Syracuse, N. Y.

When business duties permit, Campana works at his hobby. Beginning with a number of pencil drawings of a subject, he studies his painting procedure through carefully. Then he selects a steel sheet which is sprayed with a white enamel base coat. Mineral colors for foreground details are then applied by Campana with a small camel hair brush. He adds background colors with an air brush.

Fires paintings in industrial furnace

After the enamels have dried, the painting is fired in a large industrial furnace of a Chicago manufacturer of porcelain enameled products. He fires his paintings at about 1500° F.

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for two minutes. If he is not satisfied with the lustre after the first firing, he retouches the work with more colors and fires the piece again.

Finished paintings are then hung in Campana's own "art gallery"—the reception room of his place of business.

Development of enameled art dependent upon industry

Deeply interested in the expansion of industrial porcelain enameling, Campana follows each improvement in furnace design with eagerness. He knows that the size of porcelain enameled murals depends only upon that maximum size at which architectural porcelain enameled panels can be successfully fired. Larger and more colorful murals, finished in permanently attractive porcelain enamel, cannot be created without the aid of research being carried on by the porcelain enameling industry.

Left: As were the artist's other murals, "Lady Snow" was fired in a large industrial furnace of a manufacturer of porcelain enameled products.

Below: "Strike the Happy Hours", a 36-inch square porcelain enameled painting, was fired at a temperature of 1500° F.



Many Porcelain Enamelters Prefer

TREOPAX Z
TREOPAX S
TREOPAX

for

Color Stability Scratch Resistance Opacity Enamel Working Properties

The experience of users is a good yardstick for determining the worth of a product. Our Field Engineers report the following summarized statements from Superintendents in the Porcelain Enamel Industry:

TREOPAX Z "Very pleased with results...standardizing 100% on Z."

TREOPAX S "Doing a beautiful job on table tops and sinks."

TREOPAX Z "All white now being opacified with Z."

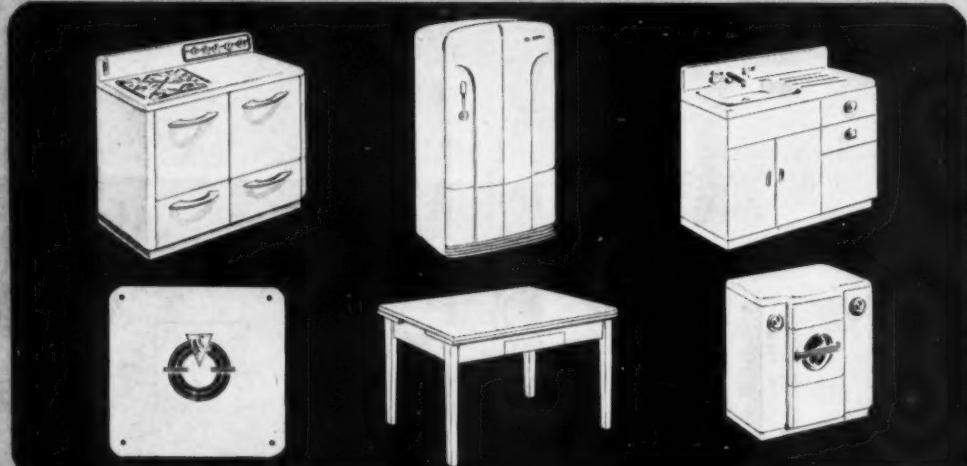
TREOPAX "Rates as the best opacifier made."

TREOPAX Z "Our standard opacifier in steel enamel."

TREOPAX Z "Giving excellent results in zircon enamel."

TREOPAX "Use being continued in cast iron and antimony AR."

Our field engineers are well equipped to discuss your problems. They can support their recommendations by laboratory data and by practical experience with shop conditions.



TAM

TITANIUM ALLOY MANUFACTURING COMPANY

EXECUTIVE AND SALES OFFICES . . . 111 BROADWAY, NEW YORK CITY
GENERAL OFFICES AND WORKS . . . NIAGARA FALLS, NEW YORK

"Porcelain wallpaper" dramatizes the versatility and flexibility of "porcelain on steel"

the ceramic coating of steel in continuous sheets — from
raw steel coil to finished 100 foot lengths

By Dana Chase • EDITOR



We have seen many well established conceptions of long standing tossed to the winds by our industry during recent years, but probably none more dramatic than the introduction of "porcelain wallpaper."

It is doubly dramatic. First, because the production of the material utilizes entirely new equipment from the rolling of the light gauge steel to the shearing of the finished white coated sheets into 100' lengths. Sec-

ondly, because the final product, finished "porcelain on steel," is so flexible that it can be rolled into coils with a minimum radius of six inches without damage to the material — in fact, it is the standard procedure to roll the finished product into coils.

"Mirawal" is the trade name given this newest product which is now in limited production in the plant of Baltimore Porcelain Steel Corporation, Baltimore, Maryland. The product was first conceived by R. G. Calton, Nashville, Tenn., who, with the help of Ferro Enamel Corporation's laboratory, set the original equipment

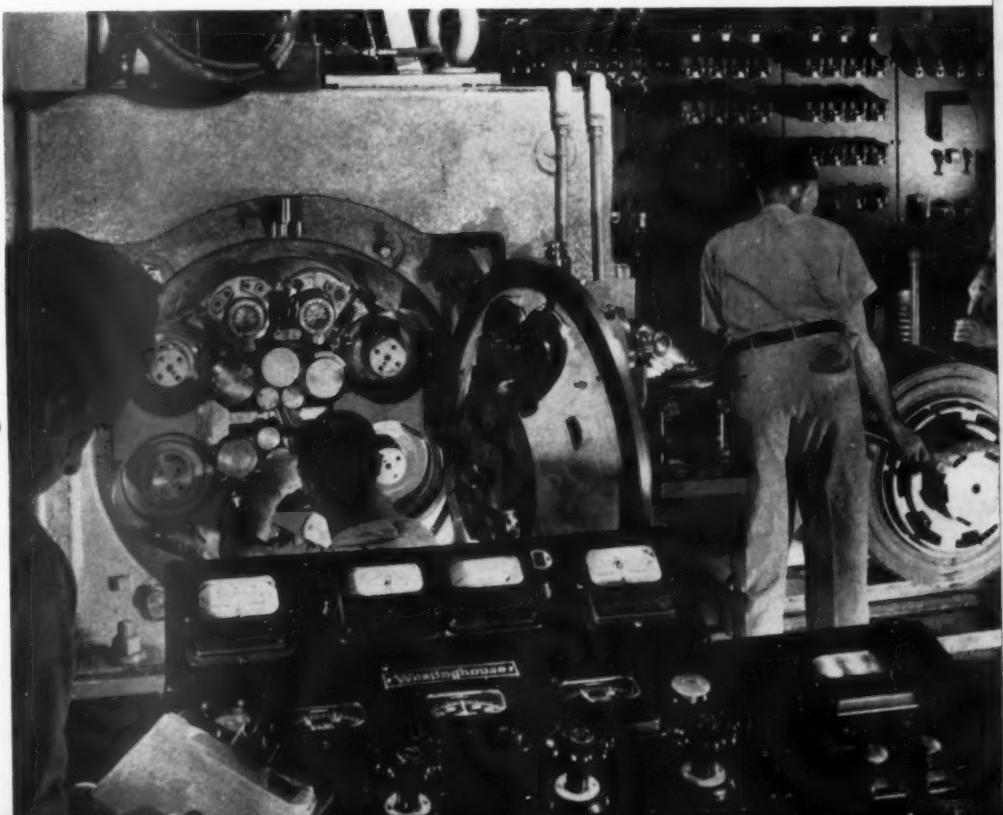
up in Nashville. The details of enameling were then worked out with the aid of Paul G. Kates, W. Wayne Blackwelder and R. B. Evans. When the product was ready for production, it was turned over to R. R. Trubey who moved the "pilot" plant to Baltimore where mechanical improvements related to both quality and higher production are under way under the supervision of R. B. Evans and N. E. Young, chief engineer.

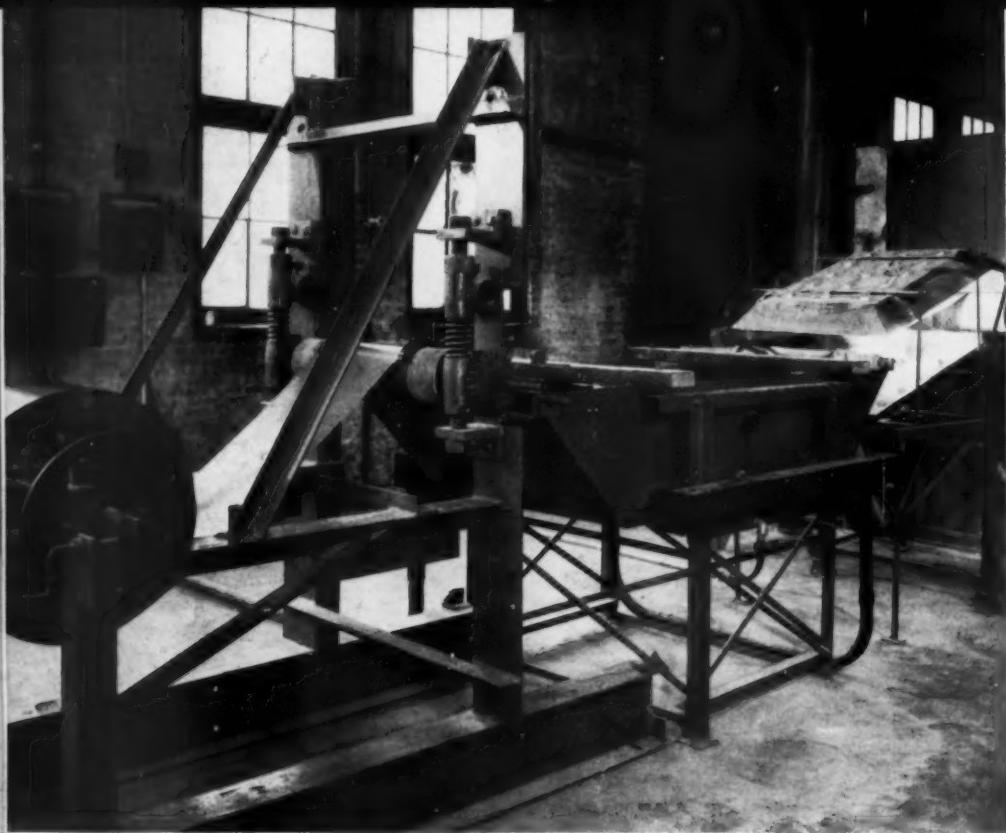
The present "pilot" plant or semi-production plant unit can be readily multiplied as other important factors expand. These include light gauge

The 32 gauge sheet used for "Mirawal" is rolled on this special type cold mill designed for the rolling of sheets to extremely close tolerances. The mill is capable of rolling sheets to a thickness of 0.001". From this mill the 32 gauge sheets for "porcelain wall paper" are shipped in coils to the finishing plant in Baltimore for the continuous coating operation.

PHOTO COURTESY
AMERICAN ROLLING MILL CO.

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The 32 gauge steel sheet leaves the coil and starts its trip through the continuous finishing process. The nickel tanks are shown in the center of photo followed by an infra-red lamp dryer. The first set of drive rollers is at extreme right.

rolling facilities for the steel and progress in the development of an entirely new market.

How Mirawal is produced

The new product, dubbed "porcelain wallpaper" by its friends, is man-

ufactured by taking a coil of 32 gauge (010) steel and coating it continuously without cutting it into short lengths.

A coil of steel, pre-cleaned at the mill so no pickling process is needed, is placed on a rack at one end of the

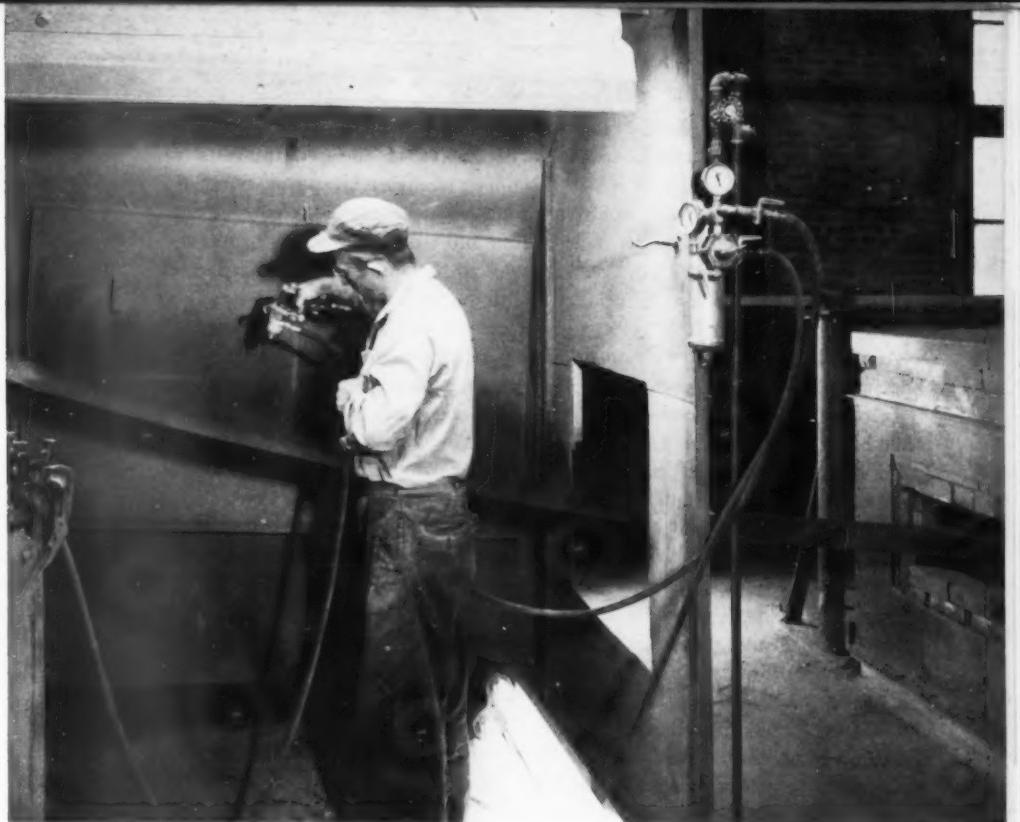
line. It is given a nickel flash in a solution of single nickel salts with a strength of 12 oz. per gallon, and then passes through an infra-red lamp dryer to the first set of drive rollers. From there it passes through the ground coat spray booth, where a



The sheet emerges from the ground coat furnace in which it is suspended without burning tools. It then travels through the second set of drive rollers located immediately ahead of the finish coat spray booth shown here in the foreground.

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As the sheet leaves the first set of drive rollers, it assumes a gentle arc, passing through the first spray booth where ground coat is applied to both sides. Then it goes through the ground coat furnace to the second set of drive rollers.



soft ground coat is applied on both sides at two thousandths (.002) thickness. It then goes through the ground coat furnace, where it is fired at 1560° F., to the second set of drive rollers, being suspended in an arc between the two sets of rollers. The

tension on the two sets of rollers is such that the steel does not rest on anything between them.

From the second drive, the sheet travels through another spray booth where a titanium, acid-resisting cover coat is applied to both sides of the

sheet at a thickness of four thousandths (.004), then through the second furnace where the finish coat is fired at 1560° F., to a third set of drive rollers. The steel is suspended between the second and third sets of drives in the same arc as between the

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y booth
eground.

The finished sheet leaves the finish coat furnace and travels through the third set of drive rollers to the inspection table. It is coiled in 100-foot lengths and sheared with an ordinary paper cutter. Notice completed coils on the floor.



first and second sets of drives. It is then inspected, cut into one hundred foot lengths, and coiled for shipping.

Total thickness of the coated sheet is twenty-two thousandths inch (0.022) — ten thousandths of steel and six thousandths of porcelain coating on each side.

"Mirawal" may be cut with an ordinary paper cutter without spalling or cracking. It can be coiled into a circle having a 6" radius. The installation is very simple. It can be fastened to the wall with linoleum glue and trim strips. It may be applied to plywood, plaster or any flat solid wall.

Snap-on mouldings may be used to form a horizontal pattern, adding depth and size to small rooms.

Economy of production in continuous sheets, coupled with light weight and ease of handling, should offer an opportunity to greatly increase the breadth of the industry market.

First installations of "Mirawal" have been in kitchens, but it is expected that many other applications soon will be made to give the purchaser the clean appearance and permanence of surface impossible with a finish other than an inorganic material.

Broad market possibilities

This new product could well make a strong bid for the broad market that always exists in both homes and commercial structures for clean, durable wall coverings.

Thousands of homeowners have been disappointed in recent years to find that wall coverings used for bathrooms and kitchens deteriorate rapidly, requiring replacement. With "porcelain on steel," the walls may be expected to retain their original appearance and durability for years on end.

One of the deterrents to rapid expansion in the use of ceramic-coated steel for building purposes has been the "tailor made" nature of most of the products. Normally, careful engineering, fabrication, and finishing must be combined with exactness in the preparation of the building on which architectural porcelain is to be used if the final surface is to meet

desirable standards.

In spite of the requirements of conventional architectural porcelain for exactness in engineering, fabrication and erection, we fully expect the market to continue to expand, and with increasing rapidity as steel becomes more readily available. Its advantages have been proved beyond the question of a doubt to those who have taken advantage of its possibilities.

"Porcelain wallpaper" may add to this market for "prefabricated" material the ready market for a "flexible" wall covering that can be readily adapted to the existing conditions, and cut and fit on the job.

Commercial possibilities for ceramic-coated steel are endless. Butcher

shops, grocery stores, creameries, packing houses, breweries, food processing plants, and public lockers are only a few of the examples of the type of business which not only can add greatly to the sanitary conditions and merchandising appeal of the establishments, but save money at the same time through economy in maintenance costs.

Toilet rooms in railway stations and public buildings, wainscoting for schools, and complete interior wall surfaces for many rooms requiring the utmost in sanitation could well add many miles to the requirements for "porcelain on steel" sheets.

Notice that we now speak in terms of "miles" and not "square feet."



How to choose the correct type of porcelain enamel for specific applications

Part I

By J. E. Hansen • FERRO ENAMEL CORPORATION

SINCE there are literally hundreds of porcelain enamel formulations used commercially and since small variations in composition often markedly change the properties of the frit, it should be understood that no one enamel can be ideally suited to all conditions or for all domestic or industrial purposes.

Just as an automotive engineer specifies low carbon steel for one part of an automobile, alloy steel for another part and aluminum or bronze for still other parts, in order to give the longest life and greatest efficiency under the service conditions to be met, so also should the porcelain enamel engineer choose and specify a type of vitreous coating to give long life, greatest efficiency and lasting appearance to the base metal on which it is applied.

Porcelain enamel was initially chosen as a "finish" by manufacturers of plumbing fixtures, kitchen utensils and home appliances primarily because of its ability to protect metal from rusting, and also because it produced an attractive surface which can easily be cleaned.

We can remember the kitchen range of black and sometimes rusting iron, decorated with nickel plating. Within our own span of years in the industry we have seen this home appliance improved in appearance, starting with two or three enameled panels until now the majority are fully finished in porcelain enamel, both inside and outside. We have seen the washing machine pass from all wood or wood and galvanized iron construction through copper and aluminum to porcelain-on-steel. We have seen similar development with refrigerators and other household appliances.

With this wider use of porcelain enamel, finishes which give good appearance only are no longer sufficient. Many service conditions require resistance to acids, and others to mild or even strong alkalies; some require resistance to boiling water and others to the action of freezing water. All of this gives emphasis to the statement that choice of the correct type of porcelain enamel should be governed by the service condition to be met.

Specifications

Federal, state and county agencies often specify properties of materials which they purchase in terms of chemical analysis and other physical properties. Such specifications are worthless or meaningless in the case of porcelain enamel for several reasons, namely: the various manufacturers do not make public the basic formulation of their products; the products are difficult to analyze accurately; and, lastly, regardless of chemical composition of the enamel, the final properties of the finish depend as much or more upon the processing during the enameling operation as upon composition of the frit.

Specifications for porcelain enamel are never on a basis of formulation, but are drawn up on a basis of appearance, freedom from significant imperfections and upon a basis of the service condition to be encountered. Resistance to acid attack, resistance to specified corrosion attacks, resistance to impact and other conditions may be described; minimum and maximum thickness may be specified if this is important on the finished product.

The Porcelain Enamel Institute has developed and approved certain tests

covering the physical properties of enamels. Many of these same tests have been approved and adopted by the Enamel Division of the American Ceramic Society.

The Enameled Utensil Manufacturers Council has arrived at *minimum* standards of acid resistance and solubility of enamels for kitchenware, and has devised methods of testing. These specifications have been promulgated by the U. S. National Bureau of Standards as Commercial Standard CS 100-44 (Sept. 25, 1944).

There are likewise available commercial standards covering the manufacture of porcelain enameled hot water storage tanks, viz., U. S. Bureau of Standards Commercial Standard CS 115-44 (Feb. 29, 1944).

Reflectance values, as measured on some particular instrument, may be specified for white enamels, or for light reflectors, but "color" remains difficult to specify except by reference to a master sample.

Dry process vs.

wet process enamels

Occasionally a choice must be made between dry process and wet process enamels. In general, only cast iron is enameled by the dry process; the exceptions would be certain pieces of heavy steel chemical apparatus and, at the other extreme, copper watch dials and jewelry.

However, not all cast iron is coated by the dry process; small and medium weight castings are coated by the wet process. This is true particularly in the heating stove field.

Heavy parts such as cast iron sanitary ware are ordinarily porcelain enameled by the dry process. Castings of the chemical analysis used in sanitary ware foundries and molded

by their practice are enameled with less loss by the dry process than by the wet method, and economy in heating is obtained by never allowing the heavy castings to cool to room temperature between successive coats of the enamel.

Oftentimes castings which can be quite successfully enameled by the dry process cannot be enameled by the wet method, due to blisters which occur each time the casting is heated. In the dry process the blisters can be punctured and the area re-dusted, and good results obtained.

Dry process enamels are of both the leadless as well as lead-bearing type, and may be either non-acid-resisting or acid-resisting, depending upon service requirements.

Wet process sheet iron enamels

In most cases, a porcelain enamel finish consists of a ground coat plus one or more cover coats, the latter being of a composition different than that of the ground coat. If two cover coats are applied, they may be of the same or different composition. Each coat requires a firing operation before application of the next coat, except as noted following.

Occasionally a ground coat enamel, after drying and before firing, will be given an overspray of another enamel of a compatible type, and both the base coat plus the overspray fired as one coat. Similarly, a basic cover coat enamel may for some end uses, either while wet or after drying, be given an overspray of enamel of different type, and both the base enamel and the overspray fired as one coat.

Only rarely, to date, is an enamel of the cover coat type applied directly on the base metal. Whenever such practice is followed, special types of frit and base metal are required.

Ground coat enamels are occasionally used as a "finish"—on parts where appearance is secondary and where protection against rusting is the primary consideration. For some such applications, oversprays are beneficial, as will be discussed later.

Function of ground coat

The primary function of a ground

coat for multiple-coat work is (a) to provide adherence and (b) to prevent reactions between the metal base and the cover coat, of a type which probably would result in surface defects.

Composition of the ground coat may affect reboiling tendencies in the cover coat fire, copperheading, fishscaling, blistering, hairlining in the cover coat fire, sagging of cover coats, breaking on radii, thermal shock resistance and other physical properties.

Function of cover coat

The function of the cover coat enamel is (a) to provide the appearance needed for successful merchandising results, (b) to provide protection against corrosion, and (c) to protect against abrasion, physical forces, and provide a sanitary finish.

The problems involved in attempting to apply "glass" to a metal base often require a compromise between workability and the optimum in the physical properties or appearance of the coating.

Selection of a ground coat

Above all, a ground coat has to have "workability" in the enamel shop. This includes freedom from processing troubles and its behavior in subsequent firings. Consequently, the choice of ground coat frits in any plant is made with a view to obtaining this workability and freedom from defects in the finished ware.

Occasionally single frit ground coats are used, but, in modern commercial practice, blends of two or more frits are almost universal. Thus to a "base frit" we may add a quantity of a second frit to both decrease the fusion point and increase the adherence, and then may also add some of a third frit to provide insurance against copperheads.

In a recent series of articles in *finish*, H. D. Carter, B. W. King and H. C. Draker conclude⁽¹⁾ that "the use of a properly blended ground coat appears advantageous in regard to workability as well as resistance to both thermal shock and impact resistance." They further state "choice of ground coats should not be diffi-

cult in that a wide range of conditions can be covered by properly blending different frits having satisfactory properties." With these statements, your present author agrees.

Coefficient of expansion is a guide to some physical properties of enamel finishes but it should not be used as an absolute criterion of acceptability of the enamel. If you smelt your own frit and know its composition, you can calculate the theoretical coefficient of expansion. If you purchase frit, your supplier no doubt will be glad to furnish either the calculated or the actual measured coefficient for frits where this property is important in the end results.

Thermal shock resistance

For best thermal shock resistance (resistance to rapid thermal change), as on kitchen utensils and electric roaster parts, a ground coat of high coefficient of expansion should be chosen. However, physical structure also affects resistance to thermal shock, and kitchenware manufacturers should rely on carefully conducted tests in the selection of frits.

Impact resistance

The resistance to impact does not seem to be affected by the coefficient of expansion of either the ground coat or the cover coat enamel.

Adherence

Adherence of the ground coat enamel to the underlying metal is usually a characteristic of the particular ground coat used, the steel base, the pickling treatment and the firing treatment.

Spalling on radii

To resist spalling on small radii, or on beads of ware, a ground coat of high coefficient of expansion should be chosen.

Hairline resistance

Hairlines are caused by a break in the enamel coating during the cover coat fire, and result from a condition of strain on heating established within the piece. Coefficient of expansion of the ground coat or other possible

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Sign convention emphasizes selling and service

second report on NESA annual meeting

NEARLY 1200 persons attended the second annual convention and equipment exhibit of the National Electric Sign Association held at the Stevens Hotel in Chicago, January 18, 19 and 20. Registration figures showed that attendance at the 1948 NESA convention was double that of the previous meeting which also was held in Chicago.

Boston man elected president of association

Jess D. Traylor, Donnelly Electric & Mfg. Co., Boston, Mass., was elected president of the Association at a business meeting held on Tuesday, second day of the convention.

Other officers elected were: vice president, Jake C. Allen, Southern Neon Displays, Inc., Atlanta, Georgia, and secretary-treasurer, Harry H. Brown, Federal Electric Co., Chicago, Ill.

Maurice R. Ely will act as executive secretary again this year.

Selling and sales promotion discussed

The theme of "selling and sales promotion" dominated the Monday and Wednesday sessions while Tuesday was devoted to the transaction of Association business. (*An account of part of Monday's opening session, including a meeting of the Sign Division of the Porcelain Enamel Institute and announcement of NESA sign contest winners, was carried in the February issue of finish.*)

Speakers at the Monday session included Robert E. Moore, general manager, Makelim Associates, Chicago, and Frank W. Lovejoy, Socony-Vacuum Oil Company, New York City.

In his speech, "Streamline Your Selling as Well as Your Signs," Moore stated that the sign industry is one of the remaining industries

"basking in the sellers' market." However, he warned that sales volumes can change over night, pointing out that he knew of one company which did a million dollar (before taxes) business in 1946, but



President Traylor

went into the hands of receivers in 1947.

Though we are entering an era of professional salesmen and selling, said Moore, only 25 per cent of the companies have a sales training program. The word selling is synonymous with service, said the speaker, urging the Sign men to "be of help to the customer."

Moore presented the following ways to "streamline selling":

1. *Training.* Train salesmen to know the scope and limitations of their product and to know their prospects.

2. *Planning.* Salesmen should plan the time and location of their calls and should know the facts about their product and the advantage of presenting those facts to certain customers.

3. *Follow through.* Tell the whole story.

4. *Be friendly.* The speaker quoted J. C. Penney as saying "If you would succeed in business, be friendly. Many men with otherwise mediocre talent have made marked success by being friendly."

5. *Effective showmanship.* Dramatize the product and show the prospective customer something tangible. "Salesmen going in with ideas will find the buyer more receptive than to salesmen talking price," said Moore.

6. *Frequent sales meetings.* Moore stated that the National Cash Register Company has one of the better sales organizations and holds sales meetings every day. The exchange of information should be made at the sales meeting.

7. *Thinking.* Selling will be made easier by thinking along the right lines.

In closing his address, Moore advised his listeners that if they streamlined their selling, they wouldn't have to worry about price cutting.

Five rules for a good salesman

"It Is Later Than You Think" was the topic discussed by Frank Lovejoy. "I fear we have temporarily lost our balance. Salesmen have forgotten how to work," said Lovejoy. "Every sale has a solution. Keep going, don't stop. Streamline your effort and plan your work, but keep going," emphasized the speaker.

Lovejoy then presented the five cardinal rules to follow in becoming a good salesman. Those rules, plus a sixth one added by the speaker, are:

1. *Don't talk too much or you will tell on yourself.*
2. *Never assume an argumentative manner.*
3. *Acquire first, attack after.*
4. *Be sure buyer understands that you understand his objections.*

5. Stick to one key issue.
6. Make buyer say why he dislikes product.

In closing Lovejoy asked his audience to remember "We buy from whom we like, not what we like."

Economist sees no depression in near future

A surprise guest speaker on Monday's program was Dr. Alfred Haake, consulting economist and lecturer, whose subject was "What's Ahead for Business?" Dr. Haake could see no depression in the near future for the following reasons: there is a tremendous need for goods; inventories are too low; many new plants are going up (usually a good omen); we are way behind in tools and machines (production goods); and 10-15 millions homes are needed to be built in the next ten years.



Robert H. Perry

Regarding inflation, Dr. Haake said that high prices are caused by inflation, and not vice versa. Only increased productivity will stop inflation, and not reduction in the amount of money.

Speakers at the Wednesday afternoon session, at which H. H. Wineburgh, president, Texlite, Inc., presided, were: Martin Maher, advertising manager, Florsheim Shoe Company, Chicago; N. F. Lawler, director of advertising and sales promotion, Nash Motors Division, Nash-Kelvinator Corp., Detroit; and Robert H. Perry, business specialist, U. S. Department of Commerce, Chicago.

In discussing "You Can't Put a Price Tag on Quality," Maher said that we are living in a price-conscious economy. We think too much of "How much?" instead of "How good?"

As a buyer speaking to producers, Maher warned that although "we



N. F. Lawler

have to buy, we still have a choice from whom we buy." There never was or will be a price tag on quality, said the speaker, going on to tell his audience that quality is a two-way deal which both the buyer and seller should recognize.

Sign buyer suggests NESA educate buyers

A constructive addition to the NESA program was suggested by Maher. He asked that the Association add a program to educate the buyer by telling him what material is in the signs that he buys. He remarked that *some company executives still ask that porcelain enameled signs be painted!*

Maher concluded his address by telling the NESA members that they won't have any trouble if they remember "you can't put a price tag on quality."

Income from selling service

"Selling Sign Service," an address by N. F. Lawler, contained suggestions for selling service to the customer long after the original sale was made. Revenue derived from sign service can take care of fixed

expenditures, said the speaker. He remarked that during the war automobile dealers made money with only service to offer their customers. "Why create competition from lack of service?", asked Lawler, pointing out as an example the ice industry which lost a lot of its business to the mechanical refrigeration industry because of poor service.

Lawler also suggested that sign suppliers avoid deviating from specifications set down by engineers of buyer companies. Sometimes signs are so changed by the supplier that they lose the value of uniformity and continuity of national signs, said the speaker.

Construction barometer indicates continued prosperity

In discussing "Business Trends," Robert H. Perry cited Department of Commerce figures that give the Sign men an optimistic business outlook for 1948. Available figures indicate a 20% increase in total construction for 1948 over last year, with commercial construction to increase about 37%, said Perry, as he pointed out that the construction industry has always been a sensitive indicator of business trends. One



Martin Maher

survey shows that 71% of large retail grocers are planning extensive remodeling, and that 40% of the smaller grocers are also in the market for remodeling, stated Perry. (*What an opportunity for architectural porcelain enamel producers!*)

These committees work for YOU when you belong to the P.E.I.

Seven important committees of the Porcelain Enamel Institute, comprising men who represent some of the industry's best brains and experience, are working for you constantly when you belong to this national association. If you are not now a member, you should consider the benefits of this work to your organization and to your Porcelain Enamelled products.



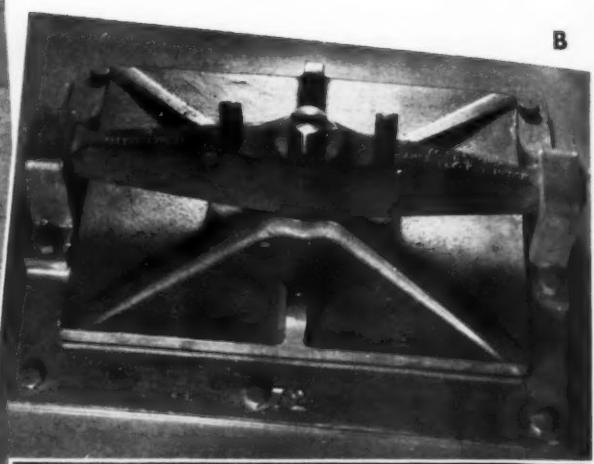
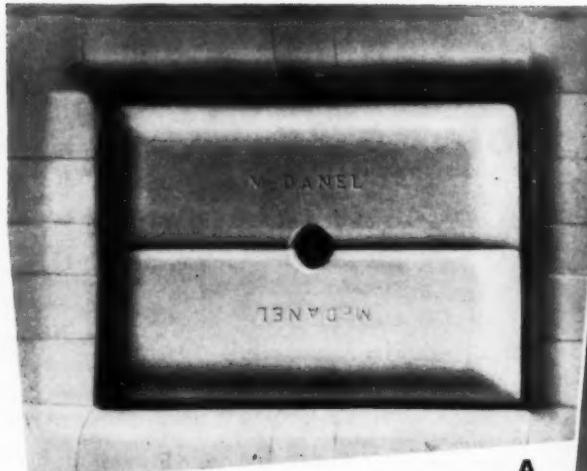
This Emblem designed by P.E.I. identifies products finished in genuine Porcelain Enamel. It sets these products apart as having the highest quality finish and guides the purchaser in making his selection. It is offered to manufacturers using genuine Porcelain Enamel as an important part of their product finish.

1. MARKET DEVELOPMENT COMMITTEE — provides the Institute, its sub-divisions and individual members, counsel, guidance and assistance in connection with the successful marketing of Porcelain Enamelled Products and supervises advertising and publicity activity.
2. COMMERCIAL RESEARCH COMMITTEE — locates, investigates, studies and reports on both existing and potential markets, advising the membership on market trends and opportunities.
3. PRODUCT STANDARDIZATION COMMITTEE — develops methods of testing and evaluating properties of Porcelain Enamel and develops practical apparatus for test work. (*A research fellowship at the National Bureau of Standards effectively backs the work of this committee on testing and evaluation methods.*) Performance specifications are also a part of this committee's activity.
4. PROCESS DEVELOPMENT COMMITTEE — does research and reports on the practicability of new technical developments, and new equipment and processes for improved efficiency in enamel plant operation.
5. FORUM COMMITTEE — evaluates technical progress in Porcelain Enameling and develops programs for the annual PEI Forum for plant men — a most valuable industry asset.
6. THE INSTITUTE DEVELOPMENT COMMITTEE — works to broaden the base of Institute activity, to strengthen its structure and to expand its opportunities for rendering greater service to the membership.
7. SALES AND MANAGEMENT CONFERENCE COMMITTEE — has the responsibility of developing a program for an annual conference to present selling methods and demonstration techniques to assist management and sales management in the promotion and sale of porcelain enameled products.

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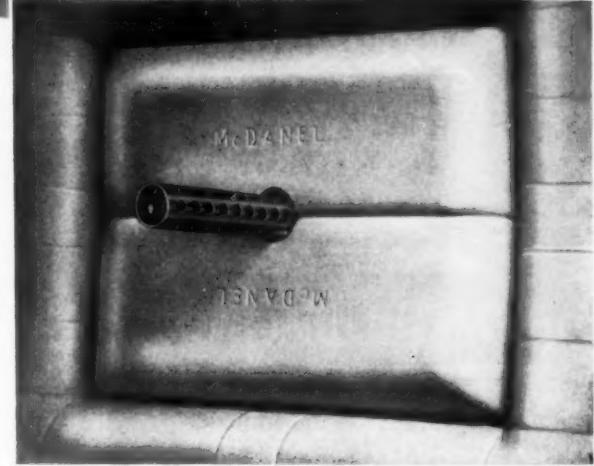
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The Washington round-up

By Wilfrid Redmond

CONTINUATION of controls over tin and antimony will probably receive Congressional approval. There has been some opposition to extending use and distribution controls over tin, but objections have been outweighed by support of the continuation by the American Iron and Steel Institute and other prominent figures in the tin consuming industries.

The President recently sent a special message to Congress, urging that prompt action be taken to continue tin and antimony controls.

This move by the White House was taken when it appeared that the bill to extend the controls might not be reported to the Senate by the Banking and Currency Committee because it contained a number of other provisions of a broader nature which the Committee probably would reject. The measure, which was introduced by Senator Tobey at the request of the Department of Commerce, asked for broad allocation powers over materials adjudged to be in short supply.

Controls over tin and antimony

The controls over the distribution of tin and antimony and a few other products which are in short supply probably will be the only powers to receive approval of Congress during this session. The Harriman bill, which would give the Government allocation and priority powers over any commodities in short supply which affect the cost of living or industrial production, is not expected to reach the White House. It is before the Senate Banking and Currency Committee and is being considered along with proposals by Senators Barkley, Taylor, and Caperhart to reinstitute price controls. Administration leaders will keep asking Congress for controls to ration short commodities, knowing that the Republicans will not approve such regulation in an election year.

The President in his message recommending renewal of tin and anti-

mmony controls said that the supply position of these metals is no better than it was when he urged continuation of these powers last November.

The Secretary of Commerce, in his second quarterly report required under the Second Decontrol Act, said that domestic distribution and use controls over tin and antimony are still needed because these materials are in critically short supply on a worldwide basis and because the United States is largely dependent upon imports for these crucial commodities. The report was sent to Congress February 3.

The total amount of primary and secondary tin available in the United States in 1948 will be about 91,000 tons. It is estimated that in the absence of restrictions on its use, commercial demands for tin would approximate 113,000 tons or about 25 per cent more than the supply.

Antimony supply to be short

It is estimated that the total supply of antimony in 1948 will be short of demand by 6,600 tons without any provision for additions to the stockpile.

Extension of controls over tin and antimony until June 30, 1949, is proposed in the Cooper bill (S.1807) now being considered by Congress.

Steel is guinea pig for voluntary controls

The Department of Commerce is making an elaborate effort to show that voluntary controls will not work. The first program to be set up under the Taft anti-inflation formula is now under way with steel as the guinea pig. The steel industry was called in and asked to appoint a committee to work with the Department on voluntary allocations. The steel leaders were told that they would be asked to consider allocation of steel products in four areas of short supply: Freight cars, building materials, petroleum production and transportation, and farm equipment. Secretary

of Commerce Harriman estimated that 10 per cent of steel product tonnage would be required in these shortage areas. This would amount to about 6½ million product tons of steel. He said that this is an outside figure. Allocations will be asked for specific firms for the production of specific items. The Office of Industrial Cooperation of the Department of Commerce is now making a study of shortage requirements in these areas. The steel industry committee will then be called in and shown the program.

The OIC is already besieged by requests from claimants for steel to appear and state their needs. Secretary Harriman said the Department will not be an expeditor of individual claims. However, public hearings will be held at which claimants will be heard.

The Department of Commerce will give an adequate performance of trying to allocate steel by the Taft voluntary formula so that when the President returns to Congress as provided in Public Law 395 (the Taft Anti-inflation Act) to ask for mandatory powers, he will be able to say that every possibility has been exhausted to make the voluntary program work.

The Department of Agriculture at first was inclined not to bother with the voluntary program with respect to grain, but now has gotten in line with the Department of Commerce in trying to demonstrate industry indifference to voluntary cooperation. All grain users recently were called in and asked to submit conservation programs. Nothing was offered that is not already being done.

Controls issue — political football

With Congress unwilling to enact mandatory controls if the Administration comes in and says the Taft voluntary agreements formula will not work, and with the Administration knowing Congress will not act, there is only one conclusion to be drawn — that the controls issue is being tossed back and forth for political effect.

The Office of Industrial Cooperation
to Page 68 →

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NEWS

V. A. Bradbury Pottery Company announces the addition of Charles H. Scott to the organization. Mr. Scott (left) is a graduate

of the University of Michigan and has been a member of the faculty at the University of Michigan since 1939.

Hillside's southern facility begins lumbering

In the general vicinity of "Reddick" factory in Tennessee, Florence, S.C., began a timbering operation on Feb. 20.

According to company officials, the new lumbering is equipped with an air saw and a planer.

Carnegie-Illinois promotions

Carnegie-Illinois Steel Corporation has announced the promotion of John A. Schwer to assistant to general superintendent, and the appointment of Joseph M. Greer to succeed Schwer as superintendent of production planning, at the Gary Sheet and Tin Mill.

Robert W. Graham has been appointed assistant general superintendent of the Carnegie-Illinois Homestead District Works, according to H. G. Melvried, general superintendent of this U. S. Steel subsidiary plant at Homestead, Pa.

The Cambridge Wire Cloth Company, Cambridge, Maryland, announces the appointment of Howard E. Claycombe as sales engineer in charge of the firm's Chicago office at 332 South Michigan Boulevard.

Lowered costs objective of AMA April packaging conference

Lowered costs and increased profits from industrial and consumer packaging through economy of production, intensified sales appeal and increased consumer convenience will be the objective of the American Management Association's Conference on Packaging, Packing and Shipping which will be held in Cleveland, April 26-29, concurrently with AMA's 17th Annual Packaging Exposition.

Discussions at the conference will stress new uses for metals, paper, pa-

perboard, glass and wood for packing and shipping products of all types and sizes. They also will emphasize improved warehousing methods and techniques, heat labelling and the prevention of damage in transit.

New general manager for A. O. Smith Kankakee Works



L. B. Smith, vice president and director of A. O. Smith Corporation, has been appointed general manager of the Kankakee Works of that firm, according to an announcement by W. C. Heath, president.

H. F. Detrick, former general manager, has had a dual responsibility, according to Heath, of building the Kankakee organization from nothing up to a group in excess of 1,600 employees, and at the same time continuing to serve as president of Smith Meter Company of Los Angeles, corporation subsidiary.

"The Kankakee Works has already exceeded the production goals originally set," said Heath. Smith Meter Company now will have the full time of Mr. Detrick.

Mauthe elected a director of Youngstown Sheet & Tube

J. L. Mauthe, vice president in charge of operations, was elected a director of The Youngstown Sheet and Tube Company, Youngstown, Ohio, to succeed Newell C. Bolton, of Cleveland, who died recently.

Mauthe is a graduate of Penn State and was captain of the school's undefeated football team in 1912.

Directors of The Youngstown Sheet and Tube Company declared a regular quarterly dividend of \$1 a share payable March 15 to stock of record February 19.

New superintendent at Gardner plant of Florence Stove

William E. Burns has been appointed superintendent of Florence Stove Company's plant at Gardner, Mass., according to an announcement by Theodore E. Keller, vice president and general factory manager.

Burns has been associated with Florence Stove for 18 years, and has had experience in various phases of range and heater manufacturing.

Armco shareholders to consider change in company name

A proposal to change the name of The American Rolling Mill Company to Armco Steel Corporation will be submitted to shareholders for consideration at their annual meeting, April 15, according to an announcement by Charles R. Hook, president.

"The proposed new name utilizes the Company's well-known trade name 'Armco', and at the same time indicates that it is a steel company," Hook stated. "The name 'Armco', which is used as the trade mark to identify all our products and all the Company's activities, has been the

theme of national consumer advertising since 1914 and has been emphasized in all publicity since then. As a result of 34 years of continuous advertising, our trade name has become better known than our corporate name," said Hook.

He also stated that the change in name, if adopted, "will not in any way alter or affect our long established Armco policies with respect to research, merchandising, or employee relations."

Gibson Refrigerator buys Coolerator

The Coolerator Company, Greenville, Mich., has been purchased by Gibson Refrigerator Co., also of Greenville, for more than \$2,000,000,

according to an announcement.

Producer of electric household refrigerators, ice boxes, farm and retail display refrigerators, the Coolerator Company will continue to be operated under its present management headed by John H. Ganzer, president. It is indicated that one result of the recent purchase will be the production of 2,000 refrigerators daily.

Gibson also increased electric range production by the purchase of Murray Corp.'s two plants at Belding, Mich. Range production is said to be running at twice the 1947 rate at Gibson plants.

Gibson recently, with other manufacturers, also took over Phoenix Iron Works, Phoenixville, Pa., and the Apollo Steel plant, Apollo, Pa.

Advice to industrial advertisers

"Advertising of toothpaste or steel, alike, is designed to build knowledge, confidence and desire; and in both instances, of these three, confidence is the most important," Henry E. Abt, president, Brand Names Foundation, Inc., told members of the Chicago Industrial Advertisers' Association at a recent meeting.

Discussing the similarity of aims in both consumer and industrial advertising in an address entitled "Are Consumer and Industrial Advertising So Different?", BNF's president called "confidence in a source, a reputation, a name or trade-mark" the most enduring accomplishment of each field.

Abt cited the comparative lack of brand-identification in the industrial field, contrasting this with the wholesale application of the brand names principle in the consumer goods field. In suggesting the greater use of brand-identification of products in the industrial field, he cited three areas in which trade-mark advancement plays a valuable role.

The first area he cited "comes with the realization that advertising relates not only to tomorrow's sales, but also to the ultimate atmosphere in which the salesman's presentation of bid is received." The second, Abt described as including "those products

which are intermediate aspects — which contribute something to products used by the consumer. You may be selling the smallest and least visible part of a machine," he told his audience, "but the machine to which you are contributing is either used by the consumer or is helping to make something the consumer needs."

BNF's president designated the field of employer-employee relations as the third area in which trade-mark advancement plays an important role in industrial advertising.

Abt mentioned value, maker's responsibility and buyer's choice among the important reasons for the wide application of brand-identification in consumer goods distribution, and reminded his audience that these reasons are much more applicable in industrial advertising than is generally recognized. "You cannot think of many customers," he said, "who buy only on specification and price. All of them want to know a lot of things that cannot be written on a specification sheet. If they know and trust your trade-mark, the other fellow is on the defensive."

Bee Chemical promotes Self

M. A. Self was elected vice president in charge of sales and a director

of Bee Chemical Company, Chicago, at a joint meeting of stockholders and the board of directors, February 2.

In his new position, Self will direct the advertising policies and sales of Bee Chemical. A graduate of the University of Kansas in chemical engineering, he formerly was associated with Sharples Chemicals, Inc.

Heads Nesco home economics department



Miss Catharine M. Jackson has been appointed head of the home economics department of National Enameling and Stamping Company of Milwaukee, according to a company announcement.

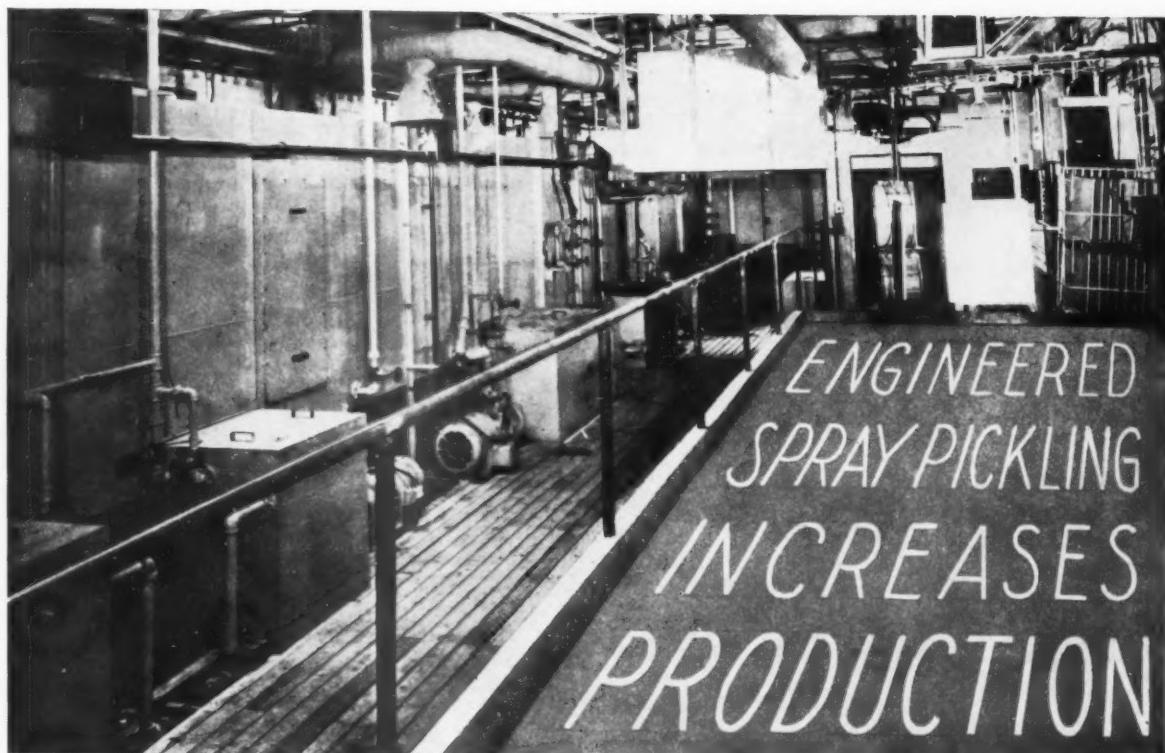
As "Betty Ware Browning", Miss Jackson's duties include supervision of Nesco's home economics department and test kitchens. In addition, she will work with the engineering and research departments in developing and improving housewares and appliances and will also assist in sales training work.

Pennsalt announces plans for new Kentucky plant

The Pennsylvania Salt Manufacturing Company has announced that it will build a new fluorine chemicals plant near Paducah, Kentucky. In making the announcement, Leonard T. Beale, company president, said the new plant will fill Pennsalt's requirements for additional facilities

SPRAY PICKLING . . .

• • • • FOR BETTER PORCELAIN ENAMELING



This fume-free Pickling Room shows a METALWASH Automatic Spray Pickling Machine in operation

GONE

is the all familiar enamel plant pickler enveloped in steam and fumes. In its place is this fully Automatic METALWASH Spray Pickling Machine, in which range and washer parts are washed, rinsed, pickled, nickel coated, neutralized and dried prior to porcelain enameling.

Parts being processed are cleanly pickled and a nicely etched surface is obtained, producing greatly improved adherence qualities and better porcelain enameling. Continuous operation reduces handling problems. The "human element" has been removed from the pickling operation. Obnoxious fumes and vapors are eliminated by a closed venting system. Control is facilitated, production is increased and ideal working conditions are maintained.

Further information on METALWASH engineered Spray pickling equipment will be furnished upon request. Your inquiries are cordially invited.

METALWASH MACHINERY CO.
149 - 155 SHAW AVENUE IRVINGTON II, NEW JERSEY

for expanding production of fluorine chemical products.

James McWhirter, formerly superintendent of the company's Natrona, Pa., plant, will be superintendent of the new operation.

A \$0.20 quarterly dividend on \$2.00 par value common stock of Detrex Corporation, Detroit, Mich., has been declared and paid, according to an announcement. This compares with common stock payments of \$0.10 per quarter during 1947.

Summer home furnishings show set for July 5-17

The 1948 summer home furnishings market will be held in Chicago, July 5-17, according to an announcement made jointly by officials of The Merchandise Mart and the board of governors of the American Furniture Mart.

The next mid-winter market will be held January 3-15, 1949. Dates for succeeding markets will be: July 5-16, 1949; January 2-14, 1950; June 26-July 8, 1950; January 4-16, 1951; and July 5-17, 1951.

New broiler features porcelain enameled pan



A new broiler, with a porcelain enameled pan and an aluminum grill adjustable to three positions, is a feature of a new line of "Florence Registered Gas Ranges," products of Florence Stove Company, Gardner, Mass.

Patent No. 2,430,843 has been issued for the broiler which carries the trademark "Broilercue." The pan and grill are mounted on the range door which swings out away from the

heat so that meat and other food may be seen and turned out with ease.

Record steel production in 1947

At a meeting of the Waukegan-North Chicago Chamber of Commerce, January 20, C. F. Hood, president, American Steel & Wire Co., reported that an American Iron and Steel Institute tabulation showed that 1947 production of ingots and steel

for castings totaled 84,787,000 tons. This is nearly 18,000,000 tons higher than the previous peacetime yearly record. Steel products shipped by the industry during 1947 exceeded 62,000,000 tons, another peacetime record.

New Cowles distributor for New England

The Cowles Detergent Company, Cleveland, Ohio, has announced the appointment of Sessions-Gifford Co., Inc. of Providence, R. I., and Boston, Mass., to serve the metal working industries of New England as distributors of the Cowles line of alkaline and emulsion solvent type metal cleaners.

Sessions-Gifford Co. will maintain complete stocks of Cowles metal cleaners at convenient locations in that area and the services of the Cowles Laboratory in Cleveland will be available to all customers, it is stated.

Additions to A. O. Smith Milwaukee organization

George Zink, formerly with Canton Stamping and Enameling, is now a ceramic engineer with A. O. Smith Corporation, Milwaukee, Wis.

Forrest Nelson, formerly with Geuder, Paeschke & Frey, Milwaukee, joined the Smith Research Laboratory in February.

Great opportunity for plumbers in kitchen installations

The planned kitchen starts with the sink and is a "natural" for the plumber since he has to connect the water supply and waste piping, according to S. S. Keeney, executive secretary, Steel Kitchen Cabinet Institute.

Addressing the 55th annual convention of the Illinois Master Plumbers' Association, January 14, Keeney urged plumbers to get their "foot in the door by installing a new sink and undersink cabinet now, and the remaining at a later date."

Keeney said the housewife later will want the same kind of cabinets



ING-RICH PORCELFIT
Made Right — Tested Right
in our own plant... before you get it!

It's teamwork . . . sound manufacture, careful testing and correct adaptation
. . . that makes Ing-Rich PORCELFIT the right product for you.

First, PORCELFIT contains a very valuable ingredient, the experience gained
from daily use. Second, after it's made it is given rigid tests in our own job
enameling plant, under actual working conditions. Third, without obligation
to you, Ing-Rich Ceramic Engineers will visit your plant to make sure that
PORCELFIT fits your particular needs.

That's the kind of teamwork that pays off—for Ing-Rich customers.

Give PORCELFIT a trial and see!

INGRAM-RICHARDSON MFG. CO., OF INDIANA, INC.
OFFICES, LABORATORY AND PLANT,
FRANKFORT, INDIANA





A new Boland continuous furnace at Industrial Enameling, Inc., New Orleans, La.

Another BOLAND SINGLE FLOW Furnace is doing a nationally known job

Advertisers of nationally known products such as those represented by the signs shown in this picture have a right to expect the best in porcelain enameled products. These signs are shown against a background of a new Boland SINGLE FLOW continuous furnace in which they were fired.

Whether it is signs or parts for ranges, refrigerators, heaters, table tops, reflectors, sinks, bathtubs — any fabricated metal product — the controlled even heating of the Boland firing zone will produce a better piece of finished ware.

Be sure your next continuous furnace has all of these features: straight away, SINGLE FLOW design; the FLOATING ROOF (Boland Patent 2,156,008); and strong, heavily insulated overall construction "built to last." Only a Boland-built furnace gives you all of these features.

The best selling point for any Boland furnace is the opinion of a user. Satisfied users are one big reason for the increasing number of Boland-built furnaces.

ALBERT J. BOLAND COMPANY

407 NORTH EIGHTH BUILDING • ST. LOUIS 1, MO.

Designers and Builders of Continuous and Box Type Enameling Furnaces

to match the steel undersink job the plumber puts in.

Florence Stove expands advertising

According to R. B. Carey, advertising manager for Florence Stove Company, Gardner, Mass., the 1948 advertising appropriation for Florence ranges and heaters is the largest since pre-war years. The campaign broke in February, with full-page 2-color ads, and will continue throughout the year.

Magazines on the schedule are Saturday Evening Post, Good Housekeeping, Better Homes and Gardens, Country Gentleman, and Progressive Farmer. A key market newspaper campaign for Florence heaters and ranges will be run in the fall of 1948.

Meeting of Northern Ohio ACS section

Approximately 50 members and friends of the American Ceramic Society Northern Ohio Section met February 5 in the auditorium of the Cleveland Engineering Society.

The following officers were elected: R. M. Bowman, counselor; E. E. Bryant, chairman; H. H. Sweeney, vice chairman; R. A. Buchholz, secretary; and D. R. Goethius, treasurer.

Speakers of the evening were Leroy C. Werking, of National Carbon Co., Inc., and Harvey N. Barrett, Jr., associated with Basic Refractories, Inc.

Werking defined in detail the properties of carbon and its effect when used as a refractory. Barrett discussed the manufacture of dolomite from quarry to finished product. Both talks were illustrated with slides.

Wirebound Box Association holds annual meeting

A 23 per cent increase in the number of wirebound boxes and crates used for shipping industrial products in 1947, as compared with the previous year, was reported at the annual meeting of the Wirebound Box Manufacturers Association at the Hollywood Roosevelt Hotel, Hollywood,

Calif., January 29 and 30.

The consensus of the membership in round-table discussions was that the use of wirebound containers will expand far beyond the present level so long as the industry is not hindered by lack of veneer, lumber, and wire.

D. R. Simmons, official of both the Alberta Crate and Box Co., Bainbridge, Ga., and Tallahassee, Fla., and the Southern Crate & Veneer Co., Macon, Ga., was elected president of the Association. He succeeds R. F. Miles, of Rathborne, Hair and Ridgway Co., Chicago, who served two years as president.

E. S. Barnhill, of Indianapolis Wire Bound Box Co., was elected vice president.

The Association voted to increase the board of directors from 11 to 13 members. In addition to Simmons, Barnhill, and Miles, the directors are:

A. L. Whiton, Chicago Mill and Lumber Co., Chicago; George H. Kubes, American Box Co., Cleveland; R. D. Brookman, Jackson Box Co., Black River Falls, Wis.; J. B. Adkins, Adkins Mfg. Co., Gainesville, Fla.; Stanley C. Craven, California Barrel Co., Ltd., San Francisco; D. R. Gooding, Wisconsin Box Co., Wausau; Fred J. Martin, Jr., Martin Brothers Box Co., Toledo; J. R. Miller, T. R. Miller Mill Co., Brewton, Ala.; Shelley Schuster, Great Southern Box Co., New Orleans; and N. W. Embry, General Box Co., Chicago.

Murray personnel holds get-together



The enameling supervisors of Murray Corporation's plant in Scranton, Pa., held a get-together at the home of Henry Wesson, Elmhurst, Pa. Most of those attending the party are shown in the accompanying picture. They are, left to right: kneeling, Wilfred Clay, Max Hoelscher and Henry

Wesson; second row, William Kuhn, Jack Reid and Paul Hapeman; back row, Stanley Tulk, Joe Hart, John Krivec, Bill Boland and Harold Leadbeater. Joe Lukofsky and Dave Mason attended the party but are not in the picture.

Ernest Richardson honored at testimonial dinner

Approximately 75 persons attended a testimonial dinner given January 20 at the Waldorf-Astoria Hotel, New York City, for Ernest Richardson, recently retired from the presi-

dency of Ingram-Richardson Manufacturing Co., Beaver Falls, Pa.

Breakfast furniture manufacturers, suppliers to the trade, and furniture dealers were among those attending the event which was given "in appreciation of his untiring efforts in the

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these 10 Outstanding HYDRAULIC PRESS features

- 1 With HYDROL, the new simplified hydraulic circuit by Verson, high pressure lines have been shortened, valving and piping reduced to an absolute minimum.
- 2 Verson improved high tensile strength, automatic type cylinder provides positive straight-line reciprocating motion of the platen.
- 3 Verson "Velvet Touch" shockless sliding seatless type surge valve.
- 4 Controls and valves readily accessible for adjustment.
- 5 Automatic changeover to full pressure made smoothly—without shock—before punch contacts the work.
- 6 HYDROL circuit incorporates automatic decompression, virtually eliminates dwell period before reversal can be made.
- 7 4-point SQUARE TYPE gibbs with renewable bronze liners, are adjustable in two directions.
- 8 Electrically controlled press operation, may be arranged for single stroke and continuous cycle production.
- 9 Accurately guided Verson cushions on renewable guides, to give full even blank-holding through entire stroke.
- 10 All Verson Presses feature the allsteel welded frame originated by Verson over 25 years ago.

VERSON ALLSTEEL PRESS CO.

Originators and pioneer builders of Allsteel Welded Presses



Send for your copy of
the Complete New
Factual **HYDRAULIC**
PRESS Catalog

introduction and development of porcelain table tops for the dinette furniture manufacturing industry."

Bennett Chapple, assistant to the president of American Rolling Mill Co., gave the keynote speech at the

New type wall panel for multi-storied buildings can be porcelain enameled

The development of a new type of wall panel which could considerably lower the cost of multi-storied buildings has been announced by John C. Green, director, Office of Technical Services, Department of Commerce.

The new panel made of insulating material covered with stainless steel is fire-resistant, easy to erect, and weighs only one-twentieth as much as a conventional masonry wall. Aluminum, copper and *porcelain enameled* steel were also mentioned as possible facing material.

Developed by Davison Associates, consulting engineers of New York

dinner. He presented the background of Mr. Richardson's industrial activities as well as those of Louis Ingram, co-founder, with Richardson, of Ing-Rich.

City, the "spandrel" panel is a light, steel-framed unit approximately 4' x 4' and may be built of several materials in either three or four-inch thicknesses to meet requirements of local building codes. It is filled with fireproof insulation and faced with metal on both sides.

A four-inch type panel is said to provide three times as much insulation as a 12-inch masonry wall with inside plaster. Present specifications for the standard spandrel panel call for cold-rolled steel frame and 24 gauge steel facing.

Meeting of industrial furnace manufacturers

Industrial furnace men assembled from all parts of the country January 12-13, in the largest mid-winter meeting of the Industrial Furnace Manufacturers Association since its founding in 1929. The meeting was held at Hotel Schenley, Pittsburgh, Pa.

Chief action taken at the meeting included: adoption of a policy on national affairs, selecting a plan for judging future business trends, approval of job definitions for facilitating wage surveys, and reporting progress made on several standardization projects.

Judges of the current IFMA prize contest for best articles on industrial, furnace, kiln, or oven applications were named as follows: Dr. S. R. Scholes, dean, New York State School of Ceramics, Alfred University, Alfred, N. Y.; Dr. E. S. Davenport, assistant to vice president, United States Steel Corp., Pittsburgh, Pa.; George W. Mason, president, Nash-Kelvinator Corp., Detroit,

Mich.; Alexander H. d'Arcambal, vice president and consulting metallurgist, Pratt & Whitney Division, Niles-Bement-Pond Co., West Hartford, Conn.; and R. H. McCarroll, director of chemical engineering and chemical and metallurgical research, Ford Motor Company, Dearborn, Mich.

Prizes amounting to \$1,500 will be awarded to authors of the three best papers on industrial furnaces, kilns, and ovens published in trade papers in the United States during the 12-month period ending September 30, 1943.

U. S. Steel to construct 13 major facilities

Ten of 13 new major facilities now under construction by United States Steel Corporation will begin operations this year, four of them in the Chicago District, according to the U. S. Steel Quarterly. These are the principal elements in the firm's \$500,000,000 development program in which virtually all operations, from the ore and coal mines to the

sales offices, will share, it was reported.

Waldo Higgins promoted

It is reported that Waldo Higgins, who has been manager of quality control at the new Kankakee plant of A. O. Smith Corporation, has been made chief engineer at Kankakee, Ill. In addition to his new responsibility, he will continue as manager of quality control.

Promotions at Pennsalt's Wyandotte plant

William F. Mitchell, superintendent of the Pennsalt plant at Wyandotte, Mich., for the past three years, has been promoted to assistant vice president, according to an announcement by Y. F. Hardcastle, vice president in charge of manufacturing, Pennsylvania Salt Manufacturing Co.

Announcement also was made of the promotion of Gustave A. Nelson to superintendent of the Wyandotte plant, and of the appointment of Herman J. Eichengofer and Hugh C. Land as assistant superintendents.

Walker to Worcester Pressed Steel Co.

Appointment of James G. Walker as assistant superintendent of Worcester Pressed Steel Company has been announced by Carter C. Higgins, vice president. During the war, Walker served with Southern Aircraft Corporation and recently was associated with Consolidated Vultee Aircraft Corporation.

Walker is co-author with Carl Taylor of the book titled "Simplified Punch and Die Making" and of "Drawing Methods and Formulae" to be published in the near future.

Brown Instrument opens Memphis office

Brown Instrument Company has opened a new district office at 922 Dermon Building, Third and Court Streets, Memphis, Tenn., according

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INTRODUCING A NEW

China White...

A BETTER TITANIUM

"AA" ACID RESISTING! Tested and proved, and used exclusively for months in leading porcelain enameling plants, Ferro's new Titanium Cover Coats are making history—are setting new standards for acid-resisting enamels.

GREATER OPACITY, combined with the extremely high acid-resisting qualities of this new frit, makes possible thinner, tougher, more durable cover coats. Easy to handle, it also gives you *better performance at lower costs*.

HIGHER COLOR STABILITY is another plus feature of this new Ferro frit. Almost any shade of white can be matched within practical limits and consistently maintained in volume production.

FERRO ✓
ENAMEL

UNCOVER COAT BY FERRO



TOUGHER "FINISH" COAT!

While applicable for one-coat work over a standard ground coat, for hollow-ware, Ferro's new Titanium frit is most generally used as the second of two thin cover coats for sinks, bathtubs, etc. Or again . . .

USED AS AN OVERSPRAY, with a single firing, on standard cover coats. This latter procedure produces very successful results and is particularly recommended for such applications as stove tops, table tops, etc.

TRY CHINA WHITE in your own plant, on some of your own production, at an early date. Write today and arrange for a demonstration. Contact your regular Ferro Representative or write direct to headquarters.

Plants in: Cleveland, Ohio; Nashville, Tenn.; Los Angeles, Calif.;
and seven foreign countries.

C O R P. • 4150 EAST 56TH STREET • CLEVELAND 5, OHIO

→ from Page 53

to W. H. Steinkamp, field sales manager for the industrial division of Minneapolis Honeywell Regulator Co. Other offices also have been established at Denver and Salt Lake City.

Du Pont sales organization changes

R. E. Troutman, manager of Du Pont Company's pigments sales office in San Francisco, has been appointed West Coast sales manager with headquarters in Los Angeles, the company has announced. He replaces Dr. Joseph Shrawder, Jr., who has been transferred to the Wilmington, Del., headquarters of Du Pont as manager of technical sales.

R. P. Enslin, salesman in the firm's western district office in Chicago, was named manager of the San Francisco office.

William J. Lawton and James C. Betty, of the company's Newark plant, will assume duties as sales-

men in the Chicago office, it was announced.

Beck heads AGA rate committee

Appointment of Frederick C. Beck, Shreveport, La., as chairman of the American Gas Association rate committee for 1948 was announced by Hudson W. Reed, AGA president.

Beck has been active in rate work for nearly 20 years, and is head of the rate department of United Gas Pipe Line Co. He has been active on the AGA rate committee since 1938.

February meeting of ACS Pittsburgh Section

Seventy members and guests attended the regular monthly meeting of the Pittsburgh Section of the American Ceramic Society at Pittsburgh, Pa., February 10.

Dr. Fitz-Hugh Marshall, Westinghouse Electric Co., spoke on "Engineering Aspects of Atomic Power." Dr. Marshall discussed atom smash-

ing, transmutation and the atomic bomb. He then demonstrated fission and the concept of critical mass by means of a "mouse trap" experiment. A diagram of a possible atomic power plant and some calculations were shown to point out that atomic power should prove competitive to coal at \$3.00 a ton.

Steffens is director of purchases at Geuder, Paeschke & Frey

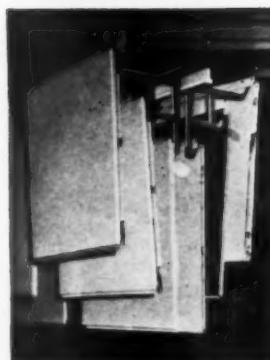
Announcement comes from August K. Paeschke, president of Geuder, Paeschke and Frey, Milwaukee, Wisconsin, that N. Martin Steffens has been appointed director of purchases.

Steffens is well known to most suppliers to the enameling industry and has been with the company for thirty years in the purchasing department, and for the last several years has been assistant director of purchases.

P. J. Kuipers, who has been director of purchases, and who has been with GP&F almost thirty-two years, will remain with the company in an

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BURNING TOOLS for Greatest Ultimate Economy



You get maximum service life and lowest cost per hour-of-service with Fahr alloy Burning Tools. Racks, bars and fixtures of Fahr alloy grade F-5 (65% nickel, 20% chromium) show practically no weight loss over long periods, and an absolute minimum of warpage and breakage. High nickel content enables them to withstand repeated thermal stresses. Fahr alloy Grade F-1 (35% Ni - 15% Cr.) is available if desired. Our standard patterns cover most requirements, or we can design ideal tools for your needs. Send for new 24-page Burning Tool Cat. No. 47.



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Harvey, Ill.

Prompt and Dependable Jobbing Service

If your sheet metal products require the lifetime protection that only porcelain enamel can offer, check with us in the design stage of your next job, and you may save money on the finished product.

At Lawndale we operate around the clock to give manufacturers the kind of service they need to supply busy assembly lines.

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1137-1139 West 14th Street
Chicago 8, Ill.

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advisory capacity.

No announcement has yet been made regarding a new assistant director of purchases to take over Stefens' former position.

Rutgers ceramic meeting

The first 1948 meeting of the Rutgers Ceramic Club and Student Branch of the American Ceramic Society was held January 14 at the Ceramics Building, Rutgers University.

Guest speaker was H. M. Kraner, of the Bethlehem Steel Company, who spoke on "Developments of Refractories in the Steel Industry." Following a brief history of the development of refractories since 1900, Kraner discussed the three main types of brick used in steel furnaces and illustrated his lecture with slides showing the advantages and disadvantages of various types of brick.

Survey shows tremendous market for ironing machines and dryers

The market potential for automatic clothes dryers and home ironing machines is tremendous, according to surveys recently completed by the market research department of Bendix Home Appliances, Inc., South Bend, Ind. It was disclosed that only 2.5% of home washing machine owners surveyed have automatic clothes dryers and that 90.5% still use an electric hand iron.

New Philco general service manager

Kenneth Kenyon, in Philco distributor and dealer work for many years and recently in charge of the firm's world-wide field engineering for the Army and Navy, has been appointed general service manager of Philco Corporation, according to Robert F. Herr, vice president in charge of services.

In his new position, Kenyon will coordinate the work of the refrigerator and freezer, air conditioner, radio and television, and other departments of the Philco service division.

Cabot heads press relations for instrument conference

Chairman of the press relations committee for the 3rd National Conference and Exhibit of The Instrument Society of America, scheduled for Philadelphia, September 13 to 17, is Hank Cabot, director of public relations for the Brown Instrument Division, Minneapolis-Honeywell Regulator Co. The announcement was made by E. J. Grace, chief instrument engineer of Sun Oil Co., and chair-

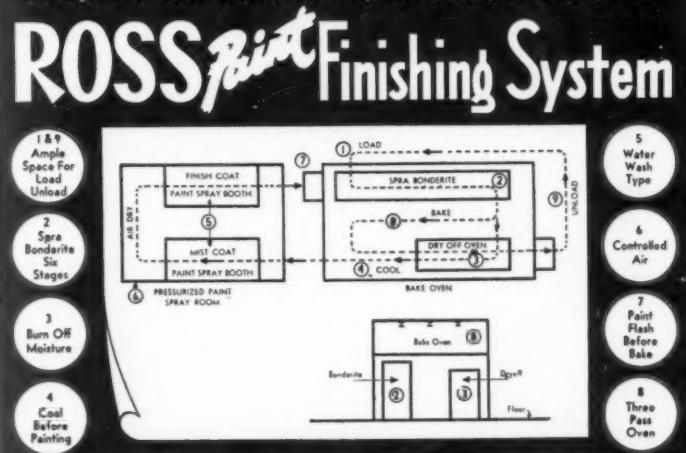
man of the ISA meetings committee.

Stetson elected a director of Yale & Towne

Eugene W. Stetson, Jr., assistant vice president of Chemical Bank & Trust Co., has been elected a director of The Yale & Towne Mfg. Co., New York City, according to an announcement by Joseph A. Horne, chairman of the board.

More news Page 66 →

Complete coordination of all component parts

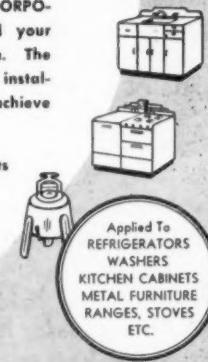


through ONE company from layout to output!

That ONE company is the J. O. ROSS ENGINEERING CORPORATION with the engineering knowledge to understand your needs and with the complete facilities to supply them. The original design, all necessary equipment, supervision of installation—the complete job is handled in a way to achieve EFFICIENCY • ECONOMY • FLEXIBILITY.

This assured coordination of all component parts results in more efficient operation, lower first cost and maintenance expense; it conserves valuable floor space and produces any required volume of output per hour to meet particular production schedules, at lower unit cost.

Write us your specifications. Helpful engineering data and service will be provided without obligation.



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201 N. Wells Street, CHICAGO - 6 • 79 Milk Street, BOSTON - 9 • 9225 Grand River Avenue, DETROIT - 4 • 1231 E. Seventh Street, LOS ANGELES - 33
ROSS ENGINEERING OF CANADA, LIMITED, MONTREAL 19, CANADA • CARRIER-ROSS ENGINEERING COMPANY, LIMITED, LONDON, ENGLAND

New industrial literature

Industrial oven bulletin

A bulletin illustrating 55 different types of industrial ovens including lithograph ovens, core ovens, weld rod ovens, wire bakers and automobile body ovens, has just been released.

Factors covered in the 24-page illustrated booklet are: oven construction, method of heating, source of heat, and material handling.

Copies may be obtained by writing J. O. Ross Engineering Corporation, 350 Madison Avenue, New York 17, N. Y.

Bulletin on dust problems

Technical Bulletin No. 7, a study of the free silica in dusts common to the porcelain enamel industry, has been prepared for porcelain enamels.

It is believed that the data and methods reported in the bulletin will be of benefit to safety engineers in the ceramic industries in solving plant dust problems. It is the result of cooperative work of Dr. Eric Arnold, Case Institute of Technology, consultant for the research staff of Ferro Enamel Corporation and Russell Frank, Ferro safety engineer.

Contact Ferro Enamel Corporation, 4150 East 56th St., Cleveland, Ohio.

Reference manual on spray finishing equipment

A reference manual for buyers and users of spray finishing equipment is the new catalog No. 96, completely revised from cover to cover.

A large section of the catalog is devoted to lightweight and heavy duty production spray guns and set-ups for use with siphon or pressure cups, pressure tank, gravity bucket or circulating systems. Special guns for use with ceramic finishes are available in all models. A handy nozzle selection chart for air and

material nozzles also has been added.

Copies of the catalog are available on written request to Binks Manufacturing Company, 3116-40 Carroll Avenue, Chicago 12, Illinois.

Report on job evaluation

Designed to give executives a general understanding of the essentials of job evaluation, a new report, "An Introduction to Job Evaluation," points out the reasoning processes on which job evaluation is based, the steps involved, and the pitfalls commonly encountered.

Among the subjects covered by the report are: background of job evaluation, methods, basic thinking processes, organizing for job evaluation and informing employees on job evaluation.

Copies of the report are available to executives who request them on their business stationery. Address: Policyholders Service Bureau, Metropolitan Life Insurance Company, 1 Madison Ave., New York 10, N. Y.

Blue book of stamping manufacturers

The fourth edition of The Blue Book of Stamping Manufacturers has just been issued. It contains a listing of members, geographically, information regarding their facilities, pertinent facts about the Pressed Metal Institute and present officers, trustees and executive committee.

The directory is available upon request to designers and users of stampings. Write Pressed Metal Institute, Union Commerce Building, Cleveland, Ohio.

Bulletin on cutting tools

A new 12-page bulletin contains the products of the midget mill group, giving the first full listing since the midget mills were limited by the War Production Board.

The listing includes high speed midget mills, junior mills, lab mills, carbide midget mills, die mills, fin mills, and micro-mills. Included in the bulletin are data on the various patterns of cut, tooth characteristics and pitches of teeth.

Bulletin 16-M may be had upon request from Severance Tool Industries, Inc., 745 Iowa St., Saginaw, Michigan.

Catalog on portable drilling and tapping machines

A new catalog on portable horizontal machines for drilling and tapping has just been released. It is stated that features of the portable machines reduce machining time on large work and permit drilling angular holes in irregular-shaped work.

The catalog may be obtained by writing Kaukauna Machine Corp., Kaukauna, Wisconsin.

Bulletin on wet method dust control equipment

A new bulletin presents a comprehensive line of equipment for the control and disposal of dust, fumes and odors. What is said to be the latest developments in the wet method are included in the bulletin.

The advantages of the wet method are demonstrated by a cut-a-way view of a "Multi-Wash" collector in operation, showing how contamination is removed from collected air in a collector which is said to require a very minimum of maintenance.

Bulletin No. 410 will be mailed upon request to Claude B. Schneible Co., 2827 Twenty-Fifth Street, Detroit 16, Michigan.

Turret punch presses with gauge tables

The application of turret punch presses with gauge tables to piercing job factors is contained in a new bulletin.

The bulletin contains information on the following principles which are said to be basic for horizontal

Binks
a single source for
**Everything you need
for better
ceramic finishing**

If you want

- 1 To cut costs by faster finishing and fewer rejects
- 2 The finest ceramic spray finishing equipment made
- 3 A single source from which you can obtain everything you need for spray finishing
- 4 Standard pipe threads on all connections, making units interchangeable and easy to service
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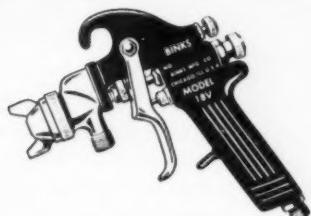
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J. J. Roche
President

Send now for your free copy of our new No. 96 Catalog-Data Book. See for yourself the completeness of the Binks Line. Request your copy on your company letterhead.



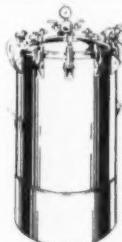
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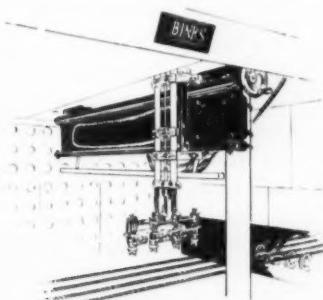
**Binks Model 18V and other
Ceramic Spray Guns**
"the finest there is"



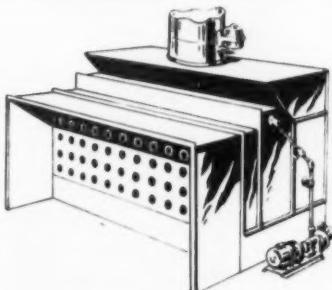
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Water Extractors**
"they clean air better"



**Binks
Herculoid
Tanks**
"permanently
corrosion-proof"



**Binks Automatic Reciprocating
Finishing Machine**
"for greater uniformity and economy"



**Binks Water Wash
Ceramic Spray Booths**
"unequalled efficiency"



Binks Air and Material Hose
"for longer life"

and vertical types: synchronized rotation, rapid station selection, 11 to 32 different dies at fingertips, stripping, short stroke, and quick change die holders.

For further information, contact Wiedemann Machine Company, 1815-31 Sedgley Ave., Philadelphia, Pa.

Dimensional data for stainless steel

A circular containing applications for a small tool grinder is now available. The booklet illustrates rapid wheel change and triple speed selection for the grinder which is adaptable for deburring, buffing and pol-

ishing operations.

The circular is available upon request from Corlett-Turner Company, 1001 South Kostner Avenue, Chicago 24, Illinois.

Circular on small tool grinding

Bulletin 476 describes welding fittings from $\frac{3}{4}$ " to 12", and lightweight flanges from $\frac{3}{4}$ " to 30", all available in stainless types 304, 316, and 347, monel, inconel, nickel, copper and other industrial metals.

Copies of the bulletin may be had by writing Taylor Forge & Pipe Works, P.O. Box 485, Chicago 90, Illinois.

New Supplies and Equipment

Burn spray kit

A new burn spray kit includes a spray gun and five 4-ounce bottles of "Foille" emulsion, with additional first aid units to make up a complete assortment. The emulsion is an emergency dressing for burns. Application is quick and gentle.

Contact Medical Supply Co., 75 West Van Buren St., Chicago 5, Ill.

Self-contained vertical gearmotor



A new vertical gearmotor has been announced. Each unit is a self-contained drive, consisting of a high speed motor and speed reducing unit. Nine different gear ratio combinations are available, ranging from

7.61:1 to 38.9:1.

The gearmotors may be equipped with practically any standard motor in a variety of enclosure types including: open protected, semi or totally enclosed and explosion proof. They are available in 3 to 50 hp, 220, 440 or 550 volt, 3-phase, a-c, and 3 to $7\frac{1}{2}$ hp, 115 or 230 volt, d-c.

Further information may be obtained from Westinghouse Electric Corporation, P. O. Box 868, Pittsburgh 30, Pa.

New temperature controllers

A new series of temperature controllers, designed for use with electric and gas heating units, has just been announced. Available with or without pyrometers, these step-less input controllers are suitable for electric and gas furnaces, ovens, pots and other similar applications.

Inquiries should be directed to K. H. Huppert Co., 6830 Cottage Grove Avenue, Chicago 37, Illinois.

Moisture determination by electrolytic film

A method for measuring small amounts of water vapor in gases has

been developed by the National Bureau of Standards. This procedure, which may also be extended to the determination of the moisture content of certain liquids and solids, depends essentially on the change in electrical resistance of an electrolytic film as it absorbs water vapor.

Industrial humidifier

A new humidifier which requires no steam, pumps or compressors has just been announced. Self-contained and noiseless in operation, it is said to atomize moisture in a vapor form finer than cigaret smoke. The equipment is calculated to save 90% of the cleaning time.

Full information and literature of this humidifier may be obtained from Abbeon Supply Company, 58-10 41st Drive, Woodside, New York City, N. Y.

Heavy duty centrifuge

Just announced is a heavy duty hand powered centrifuge said to be designed to swing two or four 100 cc tubes with minimum effort.

Features of the centrifuge include ball bearings throughout, and a 24 to 1 gear ratio, permitting reduced crank speed. The manufacturer says that it is ideal for general laboratory uses involving precipitation, sedimentation, or extractions.

For further information, write The Gerin Corporation, P. O. Drawer 653, Red Bank, New Jersey.

Permanent magnetic separators for installation in chutes

A new line of permanent magnetic separators to remove tramp iron from materials traveling down chutes or through ducts has been developed.

The magnets, known as "Perma-Plate," are intended for protection of grinders, crushers, stokers, pulverizers and other machinery, and for purification of such materials as food, feed, grain, ceramics, coal, etc.

Contact Dings Magnetic Separator Co., 4740 W. McGeogh Ave., Milwaukee 14, Wis.

New nitrogen generator

The development of a new low-cost nitrogen generator has been announced. A self-contained unit using the combustion method, it is said to be able to produce nitrogen at a cost of a few cents per 1000 cu. ft. of dry gas.

A brochure illustrating the "Hi-Nitrogen Generator" is available on request from Gas Atmospheres, Inc., 20011 West Lake Road, Cleveland 16, Ohio.

Coating compound for spray booths

A new coating compound for use on the walls of paint spray booths has just been announced. This new compound can be used for facilitating maintenance on both wet and dry spray booths, but is said to have characteristics that make it especially advantageous for use on the walls of dry booths.

For further information, contact

Detrex Corporation, Box 501, Detroit 32, Michigan.

New series of shears for porcelain enameling stock



Said to be particularly well suited to cutting sheet metal stock for porcelain enameling are a newly designed series of shears. It is stated that exceptionally straight cuts with minimum deformation of the material can be made with the shears.

Further information may be had by writing Niagara & Tool Works, Buffalo, New York.

Adjustable troughing idler

A new adjustable troughing idler, said to materially increase the life of conveyor belts, has been announced. The adjustable idler was designed in part for use on conveyors where an inclined belt changes to a horizontal path.

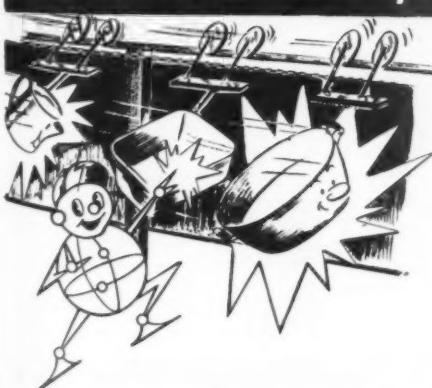
Contact Koppers Company, Inc., Pittsburgh 19, Penn.

New automatic finishing system for small parts

Especially designed for the rapid production of small parts is a new finishing system which washes, rinses, dries, dips, sprays and bakes in one continuous cycle. The system is being furnished in standard sizes, having from 2 to 20 interchangeable operations.

Contact George Koch Sons, Evansville, Indiana, for further information.

For HIGHER Chain Speeds or LOWER Firing Temperatures



Lithium Manganite is now a full fledged commercial product. It is available immediately by the ton.

Use Lithium Manganite for Ground Coats

Simple mill addition of a powerful flux—Lithium Manganite—to "hard" type frits permits significant reductions in ground coat firing temperature or increase in chain speeds.

In spite of 30-50% thinner application (only .002-.003"), users report satisfactory adherence and resistance to thermal shock. In fact, Lithium Manganite seems to exert an overall favorable influence on ground coats.

Users' monthly consumption records show that material costs

are cancelled out by enamel savings. As a result, these four benefits emerge as net profit:

1. IMPROVED COVERCOATS because of fewer ground coat defects.
2. LOWER FUEL COSTS because of lower firing temperatures.
3. COMPATIBILITY OF GROUND and COVER COATS fired at the same temperature.
4. WIDER CHOICE OF STEELS.

Write for Data Sheets

METALLOY CORPORATION

RAND TOWER

MINNEAPOLIS, MINN.

Division LITHIUM CORPORATION
OF AMERICA, INC.

THE FINISH LINE (*Cont'd from Page 15*)

and others in the organization. You will be reading about the new Warren porcelain enameling facilities in a later issue of *finish*.

Engineers and field representatives contacted include M. M. Murphy, engineer and porcelain enameling plant designer; Shipp Davis, of O. Hommel; Bucky Thomas, of Ferro; Sam Ledbetter, Jervis B. Webb Co., and Harry Morrison, of Liquid Conditioning Corporation.

Departure from Atlanta was Thursday night with the idea of having at least a half-weekday in the office—but, with the train 4½ hours late, Saturday was the only day remaining.

To the "big" city

As this is written, preparations are being made for a trip to New York and Philadelphia, where, while this issue of *finish* is being printed, your editor will attend the meeting of the Eastern Enameler's Club and then hope to get

back to Chicago by the middle of the following week for a couple of days at home.

While this description certainly adds nothing to the literature of the porcelain enameling industry, it may serve to bring out two or three points. First, the belief that to produce a useful trade publication for an industry it is necessary for an editor to spend much of his time "in the field" to get the firsthand information and plant data that will prove useful to readers. Second, it may serve to answer all printers and production men who may be critical of the last minute arrival of copy for "editor's pages." Third, it may serve to suggest the possibility that the office and editorial staffs may do a better job of producing a book when the editor is always out of town.

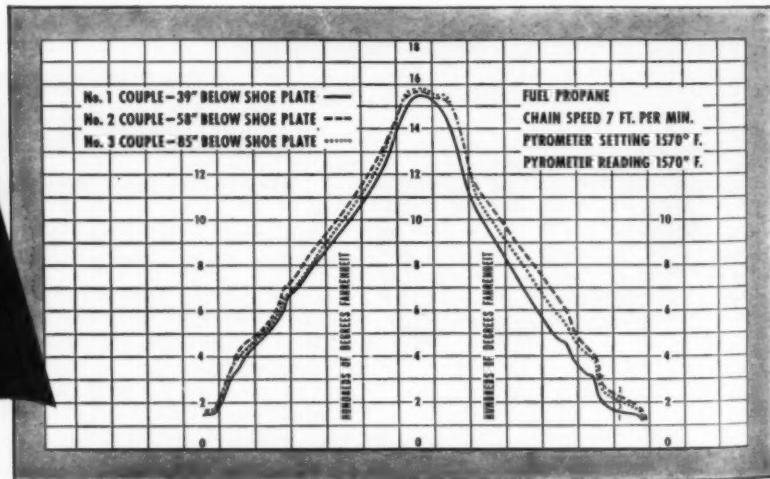
Dana Chase

EDITOR AND PUBLISHER

Chicago enamelers to participate in technical conference

The Chicago District Enameler's Club will sponsor an exhibit at the Chicago Production Show, to be held in conjunction with the Chicago Technical Conference, March 22, 23 and 24, at Hotel Stevens, it has been announced.

A panel on porcelain enameling, also sponsored by the Club, will be held from 10 a.m. to 12 noon, Wednesday, March 24. Included on the panel are B. T. Sweely, technical chairman; Edward Mackasek, feature speaker; and Dana Chase, tests and demonstrations illustrating physical properties of porcelain enamel.



Now, Ferro engineers, with their new temperature recording instrument, can show you the inside picture of your continuous furnace operation. You can see at a glance if the temperature of the ware (at various levels) is correct; also the differences in temperature of light and heavy-gauge ware, of furnace loadings and burner adjustments.

Here is an opportunity to bring your continuous furnace up to peak operating efficiency... to realize new production economies. Let our engineers tell you more about this exceptional service... this newest contribution to better Porcelain enameling through Ferro. Write, today, for complete information.


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There's wolf poison in every U. S. Savings Bond you buy. There's sweet security, too—for your home, your family and yourself.

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REMEMBER—U. S. Savings Bonds are poison to wolves!

Automatic saving is sure saving—U.S. Savings Bonds

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The handling of sheet steel

(Continued from Page 21)

The lever, screw, inclined plane, pulley wheel, axle, and wedge are the six fundamental machines. All except the wedge were developed as an aid for handling material. All our modern equipment for handling is an application of one or more of the six fundamental machines.

Efficient materials handling inte-

grates all types of handling equipment to the best possible advantage dependent upon the volume of production, the type of product to be handled, the expenditure of energy required, and the costs involved.

Adapted for finish from an address presented before the National Materials Handling Exposition in Cleveland, Ohio, Jan. 13.

How to choose the correct type of porcelain enamel for specific applications

(Continued from Page 38)

variation of the physical properties of individual enamels has only slight effect on the resistance to this breaking. A ground coat which is too fusible with relation to the cover coat may contribute toward hairlining, as also will too heavy application in operating practice.

After a break in the cover coat occurs, surface tension and mobility of each coating during cover coat

firing, and wetting or adherence between coatings during the cover coat fire materially affects hairlining.⁽²⁾

Hard vs. soft ground coat

Ground coats which fire at approximately 1600° F. usually are referred to as "hard"; those which fire out well at 1550° F. or lower are regarded as "soft".

Many enamelters still prefer the

hard ground coats and, if plant layout and production procedure are such that ground coat can be run on one furnace while cover coat is fired on another furnace, there may be no good reason (except possible saving of fuel) to discontinue this type. If there is sufficient room in a one-furnace enameling department to store fired ground coat for the following cover coat shift, again there may be no good reason to use soft ground coat.

However, oftentimes the use of a ground coat maturing at around 1540° F. will permit the firing of ground coat and cover coat at the same temperature and simultaneously on the same furnace. Thus an even flow of production is maintained more easily.

Important also is the lower ground coat firing temperature in decreasing or even eliminating excessive distortion or warping of the metal parts during firing. An example is that of a washing machine tub manufacturer who was unable to hold the bottoms of the tubs within inspection dimensional tolerances with a 1580° F. ground coat, but with a 1540° F. enamel, he was able to hold not only dimensions but also to reduce the gauge of metal from 18 to 20.

Many of the soft ground coats also are found to give better results on non-enameling grades of steel than the older hard ground coats.

Selection of cover coats

Cover coat enamels definitely should be chosen on a basis of the service to be rendered by the finished ware.

The choice can be made not only from clear frits but from colored frits (blue, black, and occasionally green or brown) or from white frits. Among the latter, the choice may be made from the antimony-opacified frits, the zircon-base type or the titania-opacified variety.

The choice may also be governed by requiring finishes resistant to: (a) acids, (b) alkali, (c) general atmospheric conditions, (d) hot water, (e) repeated freezing action, (f) soil corrosion, (g) thermal shock, (h) scratching and abrasion, (i)



"We appreciate your efforts to curb inflation, Miss Barrish, but cancelling every other invoice is NOT the proper procedure!"

**there's no place for guesswork in
INDUSTRIAL MASONRY**



A skilled HUYCK mason is pictured inside a new 6'x10' mill installing a lining of porcelain brick.

★ ★ ★ Building a furnace or lining a mill or any other industrial masonry job you can name requires the skill of experienced masons. There just can't be any haphazard guesswork.

★ ★ ★ For 22 years HUYCK Construction Company has been called upon to design and build new furnaces, and rebuild old ones . . . to line new mills or re-line old ones.

★ ★ ★ In fact, whenever any industrial masonry looms ahead — new or maintenance — people just naturally turn to HUYCK. It will pay you to do likewise.

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high temperatures — 1200° F. or more, and (j) crazing in service.

For some purposes, the choice may be further complicated by the desire for a matte or semi-matte finish instead of the usual gloss finish.

Resistance to thermal shock is required in kitchen utensil enamels, and for certain heating appliances.

Antimony-opacified frits have long been a standard in the enamel industry, although certain kitchen utensil manufacturers have refrained from using them because of the possibility, however remote, of antimony poisoning in foods. These frits are available in both non-acid-resisting as well as acid-resisting types.

The zircon-base type frits have been widely used in the past decade and possess the advantage of greater opacity or covering power at lower weights of application, compared to the antimony-opacified frits. They

are not acid resisting, and definitely do not lend themselves to use on kitchen utensils.

The titania-opacified frits are a post-war development commercially, and those being widely used possess a high degree of acid resistance. This type frit is capable of developing a high degree of reflectance or opacity at extremely low weights of application. Production of a neutral white and/or control of color is currently a problem with most producers, due to impurities in titania-containing materials and the availability or non-availability of these materials.

- (1) *Finish*, May, 1947, page 52.
(2) E. E. Bryant, Technical Bulletin No. 6 (1940), Ferro Enamel Corporation. See also E. C. Greenstreet, "Design and Factors Affecting Hairlining," Proceedings First Annual Porcelain Enamel Institute Forum, page 46 (1937), and B. J. Swoe, "Hairlining of Sheet Steel Enamels," Technical Bulletin No. 5 (1940), Ferro Enamel Corporation.

Industry news

→ from Page 57

Washer sales in 1947 top previous year by 85 per cent

Sales of standard-size household washers in 1947 were expected to hit close to 3,750,000 units with the final tabulation of December sales, or 85 per cent greater than 1946 sales, according to figures released by the American Washer and Ironer Manufacturers' Association. The highest all-time record of washer sales was established in October when sales totalled 397,113.

ASTE annual meeting and exposition in Cleveland, March 15-19

In connection with the 16th annual meeting and industrial exposition of the American Society of Tool Engineers, to be held in Cleveland, Ohio, March 15-19, plant tours have been designed to help increase production, according to the Society's national office.

Assembled in Cleveland's Public Auditorium will be an array of the newest and most efficient tools and machines as well as education presentations of the latest processes, meth-

ods and techniques for cutting costs and improving quality in the metal working field, it was stated.

Bleining award to Purdy



finishfoto

The first annual Albert Victor Bleining award for distinguished achievement in the field of ceramics will be presented to Dr. Ross Coffin Purdy by the Pittsburgh Section of the American Ceramic Society at a Section meeting to be held March 12 at Hotel Schenley, Pittsburgh, Pa., it has been announced.

The presentation, in the form of a testimonial banquet, will be made in recognition of Dr. Purdy's work in industrial ceramic technology and leadership in the American Ceramic Society.

R. J. Ritchey to head new division of U. S. Steel



finishfoto

A market development division, to be headed by R. J. Ritchey, has been created as a new unit of the sales department of U. S. Steel Corporation of Delaware, and will begin functioning March 1, according to an announcement by David F. Austin, vice president — sales.

Ritchey is now manager of market development of Carnegie-Illinois Steel Corporation, a U. S. Steel subsidiary.

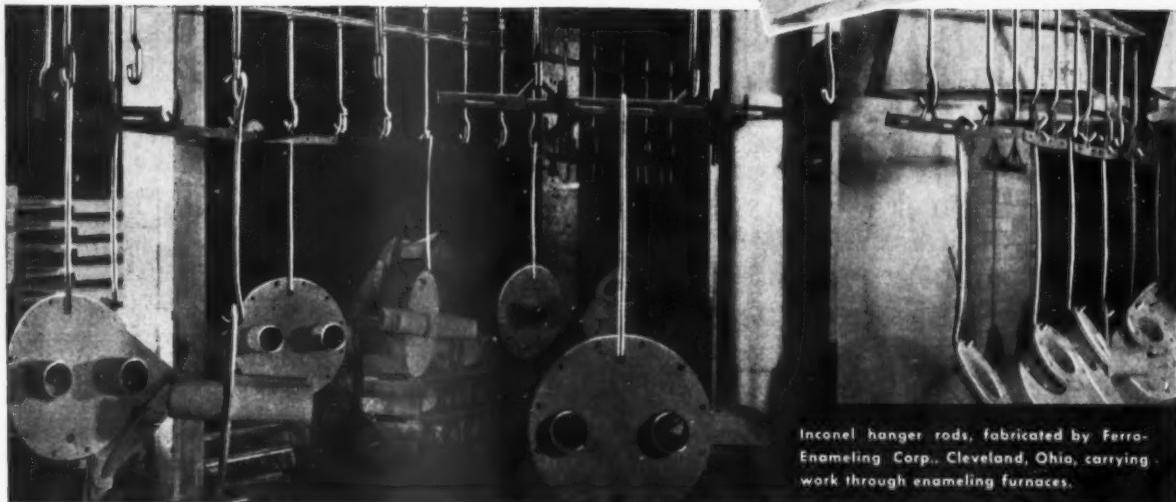
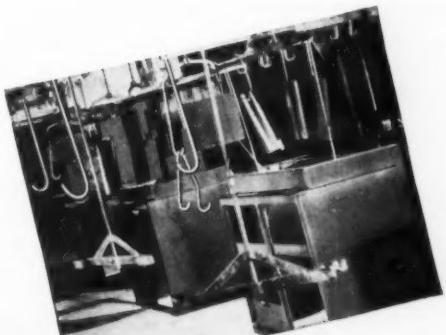
Chicago enamelers meeting with ACS Section

As the presses rolled to produce this issue of *Finish*, the Chicago District Enameler's Club was making preparations for a joint luncheon meeting with the Chicago Section of the American Ceramic Society to be held February 28 at the La Salle Hotel.

Included on the program are "The Development and Testing of High Temperature Ceramic Bodies and Metal Coatings," by Dwight G. Bennett, special research professor, University of Illinois, and "Lustron and the Porcelain Enameling Industry," by E. E. Howe, manager, enamel division, Lustron Corporation.

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Prevent "FRECKLED" finishes
and cut furnace costs with
INCONEL hanger rods



Inconel hanger rods, fabricated by Ferro-Enameling Corp., Cleveland, Ohio, carrying work through enameling furnaces.

ENAMELERS are finding that wrought Inconel* hanger rods last longer and do not mar expensive finishes.

Here are four reasons why *Inconel* hanger bars belong in *your* finish-setting furnaces:

1. **Anti-spalling.** Inconel's tightly-adhering oxide resists spalling and it will not flake away to cause "freckles" on costly finishes.
2. **Thermal Durability.** Inconel (80 Nickel - 14 Chromium) stands up under high heat. It will not break down under the severe enameling conditions.
3. **Strength.** Inconel is well known for its strength and rigidity; will carry heavy pay loads.
4. **Economy.** Inconel's per-hour service cost is low. It is long lasting, and economical in price. And since it is anti-spalling, it requires no periodic surface treatment. Inconel is a "best buy" for enamelers!

Write today for further information. INCO's Technical Service will gladly make specific recommendations.

• • •

For improved pyrometer service, you will prefer seamless, drawn, *Inconel Thermocouple Protection Tubes*. They are longer-lasting and quicker to respond. Order them from your regular supplier.

*Reg. U. S. Pat. Off.



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INCONEL — for long life at high temperatures
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